PRACTICAL HINTS TO HOUSEHOLD VISITORS

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PRACTICAL HINTS

TO

HEALTH VISITORS

BY

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FOREWORD.

THE following Lectures were given in Dublin, during the Spring of 1905, at the request of the Dublin Diocesan Councils of the "Mothers' Union" and "Girls' Friendly Society". At the suggestion of some of the audience they are now arranged as a pamphlet for the use of Workers among the poor.

G. A.

LECTURE I.

THE INFANT.

Ladies,—In arranging this programme I have tried to select the subjects upon which you will find most grievous error in your work among the poor. My experience as district nurse, though limited, has still been sufficient to make me aware of some of the difficulties you have daily to face.

Probably on no points are the English and Irish—I speak now of all classes—more ignorant than the care of children and the feeding of a family. To be properly equipped in these two branches one needs a very thorough scientific training and a capacity for applying the knowledge and adapting it to circumstances. Yet even among women of scientific training how few in this country turn their attention to these points—though the future of a nation is largely dependent on the mother's knowledge of kitchen and nursery life.

Of course among those you visit in the district you will find much poverty and suffering due to ignorance even of the rudiments of these branches of domestic science. I have seen a baby not twenty-four hours old with a face all smeared with bread: "You see, nurse, the mother has no milk, so we are giving a few crumbs till the milk comes". Eyes imperfectly cleansed at birth are still treated with the mother's milk; and that angel of death,

the village "Gamp," loves to squeeze a baby's breast in order to get rid of the milk it may contain.

Ladies, a new-born baby's eyes should be most carefully cleansed, and during bathing great care should be taken that no soap enters the little eyes; the towel and sponge used for the mother should not be employed for the baby. Eyes neglected at birth may lead to life-long blindness; eyes carelessly cleansed at birth and irritated by soap or a blast of cold air may in a day or two become inflamed. If treated with milk they will generally grow worse; the souring milk forming an admirable medium for maturing microbes, matter will form, and if not promptly attended to, the sight may be much injured or even lost. When the eyes look sore you are safe in recommending them to be bathed with a weak solution of permanganate of potash—the solution should be a pale rose-pink—or a weak solution of boracic (equal parts of a strong solution of boracic and warm water). Be careful to impress on those attending the baby that the solution is for external use. I remember an adult patient to whom a bottle of boracic lotion was given with clear instructions that it was not to be drunk, but during the afternoon the good lady not only partook of it herself, but even shared a little with two neighbours who called. I fancy the neighbours were given merely a taste, anyhow they were none the worse for what they drank, but the patient, who partook of it more freely, had such a violent attack of vomiting that, "shure, ma'am, I thought me last hour had come". In district work I strongly advise marking as poison all drugs that are not intended to be drunk.

There is no necessity to press or squeeze any baby's breasts; if they contain milk an old uncoloured soft silk

handkerchief or a bit of French wadding may be put over them; the milk will disappear in a few days.

The baby should be daily bathed in warm water; the *first* bath may be poured out at 110° F., and by the time the infant's face and head are washed, dried, and it is time to put the child in the bath, the temperature will have fallen to 105° F. Every other bath may be made up to 105° F., and by the time the baby is undressed and immersed the water will not be more than 100° or 101° F. The thread tying the umbilical cord should be examined after the first bath to see possible shrinking of the cord has not loosened it, in which case it will need to be re-tied; and after each bath the navel should be carefully dried, powdered with boracic powder, and an aseptic dressing put over the part until the cord falls off. Starch powder, Fuller's earth, or good violet powder may be used for powdering the rest of the body, care being taken to thoroughly dry the body previous to powdering; about the genitals I prefer vaseline to powder.

Control of bladder and rectum is largely a matter of training, and a baby's training may start with the second day of its independent life. Each time when taken up to be fed or when it awakes from sleep, it may be held out for a minute or two; damp napkins should be immediately changed, and very soon the child comes to understand what is expected of it.

I have never ceased to marvel at the power of habit and association in a baby's life, and this it is that makes training so wonderfully easy if a woman is patient and firm during the first months. Her baby must be fed regularly, and therefore must be awakened at regular hours; unless the child is trained during the first fortnight of its life to regular meals there will be constant

anxiety and worry. Likewise a baby, who is rocked, walked, or sung to sleep will expect these attentions.

An infant's cry is as varied as its wants—the wailing cry of an underfed child is very different from the healthy cry of a well-fed but hungry babe, whose meal time is overdue, and both differ from the wrathful roar of a baby in a passion. A fright will often make a baby cross, as in adults we have nervous irritability following a shock. Then, too, in different complaints the cry differs; in lung cases it is usually husky or difficult, in abdominal cases it is often full and strong, accompanied with a drawing up of the legs, so that tension may be relieved by relaxation of the abdominal muscles. In teething I have generally noticed a fretful irritable cry, sometimes a continuous plaintive wail is every now and then broken by a sharp scream, this may point to ear-ache or even brain trouble. The average mother imagines a baby only cries from hunger or pain, and they credit it more often with the former than the latter. Babies cry from cold, from pins, from fleas (especially if unused to them), from too much light, from fright, and from thirst. During hot weather the last is a very common cause, especially with breast-fed babies. If a meal is not due the child should be given a couple of spoonfuls of boiled water hot or cold, whichever it prefers, but hot gives more relief if there is pain as well as thirst.

There are two principal ways of knowing if a child's food suits it—Is it increasing in weight? Are the stools normal? A healthy baby at first generally increases at the rate of 6 oz. a week, any increase less than 4 oz. a week demands immediate attention. A baby weighing 7 lb. at birth generally weighs 14 lb. at five months, and

21 lb. at eighteen months old; while an infant 20 inches long at birth will, if breast fed, be probably 27 inches at six months, and 31 inches at a year old. The circumference of the head also increases rapidly during the first year, from 13 inches at birth it has often reached 18 inches at a year old.

TABLE OF HEIGHT AND WEIGHT FROM BIRTH TO THE FIFTEENTH YEAR.

Age.	Boys.		Girls.	
	Height.	Weight.	Height.	Weight.
Birth.	20·6 inches.	7·55 lb.	20·5 inches.	7·16 lb.
6 months.	25·4 ,,	16·0 ,,	25·0 ,,	15·5 ,,
12 ,,	29·0 ,,	20·5 ,,	28·7 ,,	19·8 ,,
18 ,,	30·0 ,,	22·8 ,,	29·7 ,,	22·0 ,,
2 years.	32·5 ,,	26·5 ,,	32·5 ,,	25·5 ,,
3 ,,	35·0 ,,	31·2 ,,	35·0 ,,	30·0 ,,
4 ,,	38·0 ,,	35·0 ,,	38·0 ,,	34·0 ,,
5 ,,	41·7 ,,	41·2 ,,	41·4 ,,	39·8 ,,
6 ,,	44·1 ,,	45·1 ,,	43·6 ,,	43·8 ,,
7 ,,	46·2 ,,	49·5 ,,	45·9 ,,	48·0 ,,
8 ,,	48·2 ,,	54·5 ,,	48·0 ,,	52·9 ,,
9 ,,	50·1 ,,	60·0 ,,	49·6 ,,	57·5 ,,
10 ,,	52·2 ,,	66·6 ,,	51·8 ,,	64·1 ,,
11 ,,	54·0 ,,	72·4 ,,	53·8 ,,	70·3 ,,
12 ,,	55·8 ,,	79·8 ,,	57·1 ,,	81·4 ,,
13 ,,	58·2 ,,	88·3 ,,	58·7 ,,	91·2 ,,
14 ,,	61·0 ,,	99·3 ,,	60·3 ,,	100·3 ,,
15 ,,	63·0 ,,	110·8 ,,	61·4 ,,	108·4 ,,

The above figures are quoted from Dr. L. Emmet Holt's *Diseases of Infancy and Childhood.*

The motions during the first few days after birth are greeny-brown and treacle-like; from the fourth day till about the end of the second month they somewhat

resemble beaten-up eggs, and there are generally three or four in the twenty-four hours. From the second month onward they become gradually more of the consistency of porridge, about the ninth month they become more feculent, browner, and there are about two a day; at two years old they are generally well formed. Stools very offensive, or green like chopped spinach, or containing whitish masses of undigested milk curd, or "scalding stools," irritating the orifice of the rectum and causing a rash about the buttocks, all point to digestive disturbance and demand medical attention. Cheesy masses in the stools denote undigested milk—the child is probably getting a stronger mixture than it can digest, milk more diluted may suit it better.

Besides improper feeding a common cause of diarrhœa are dirty feeding-bottles and "comforters". Comforters are quite unnecessary when children are well brought up, yet I regret to say they are popular with ignorant mothers of all classes. Children sucking toys off a dirty floor generally get sufficient pathogenic microbes, there is no need to supply a few extra ones by means of a rarely washed comforter, besides the continual suction is not desirable.

Infants need warmth, the new-born baby will die sooner of cold than hunger. For the growth and development of body cells heat is as essential as for the hatching of an egg; the overheating of the egg does not hasten the development of the chick, neither does the overheating of the child's body hasten its growth. An infant may be overburdened with clothes, or reared in an overheated nursery; neither, however, is a fault I have detected in "district work," though by no means uncommon among so-called educated women. Infants as

well as growing children need a few light warm garments, which should nowhere press nor otherwise interfere with circulation and growth. A flannel binder to keep the abdomen warm, a knitted vest to protect the chest, a warm flannel petticoat (better known as a long flannel or barrow), and a washing frock with high neck and long sleeves are sufficient with a good warm shawl. For æsthetic purposes on festive occasions a white petticoat may be added. A child's head should be kept cool but its feet very warm; for this reason I always recommend a hot-water bottle or hot brick to be placed out of the child's reach in the cradle or perambulator. Why should the infant's own body heat be expended in warming up the bed or perambulator? The more underfed a child is the more external warmth it will require, a fact ladies interested in workhouse children should always bear in mind.

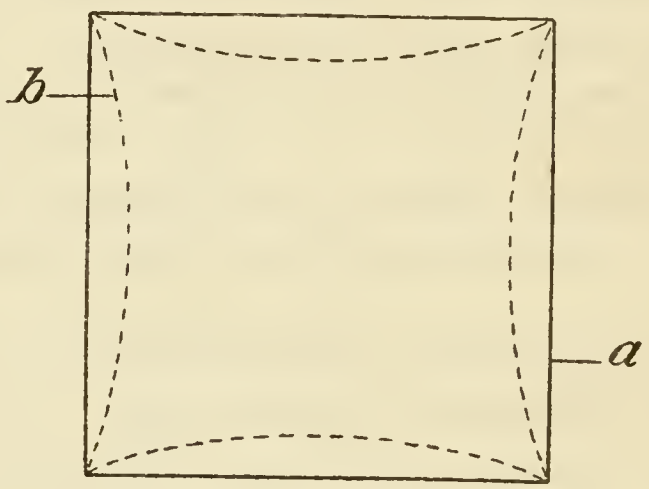
For very young babies a jacket-shaped vest is easier to put on than one that goes over the head; made at home of Shetland wool they cost between 2½d. and 3½d. a piece and have many advantages over the old-fashioned cambric shirt. Woolly garments worn next the skin should be knit loosely, as the air contained in the meshes of the wool when warmed by the body becomes a bad conductor of heat and acts as an ideal garment. If the napkin is shaped as on next page it will fit better between the legs, the ordinary square with right angled corners being unnecessarily clumsy.

Soda should never be used in washing these garments, nor should a urine-damped napkin be merely dried and put on again; both cause chafing.

The atmosphere of the room should be fresh and the temperature even, about 60° to 65° F. Babies, like older

children, require abundance of fresh air, and when the weather permits should be allowed to sleep out of doors in cradle or perambulator, sheltered from the wind and the direct rays of the sun. There are very few days in the year in England or Ireland when a child, properly wrapped up, may not be taken out with advantage for at least an hour.

Ladies, you will find it very hard to make people believe in fresh air and sunshine. In this country we do not suffer from a superabundance of sunshine, yet among all



(*a*) Old shape; (*b*) New shape.

classes you find blinds and curtains arranged to effectually keep out the few rays Nature gives us. What true housewife considers herself or the baby when the carpet is in question?

Crying, kicking, and sucking supply exercise to the baby. An infant kicking against resistance, such as the mother's hand, is in a way working, exercising its brains as well as its muscles.

To sum up: remember fresh air, sunshine, warmth, and proper food are necessary as well as exercise and rest (a young baby will sleep twenty to twenty-two hours out of

the twenty-four) for building up a healthy body. Later, I shall speak of infant feeding, to-day I want to conclude with a few words about the mother.

My own experience as a maternity nurse has been that women about to become mothers are generally very grateful for sympathy. Never have I found such a woman regarding pregnancy as natural, the physical fulfilment of that for which her body was created. The poor woman generally faces it more pluckily than her better educated and wealthier sister, yet even she speaks of it as she might of cancer or consumption. Your sympathy with the expectant mother will often be the first step towards gaining the woman's confidence, and helping her later in rearing a healthy useful citizen.

Constipation is a very common trouble among pregnant women and may often be relieved by a dessert-spoonful of salad oil taken regularly when going to bed, or liquorice or some mild aperient taken a couple of times a week; this is better than days and days of constipation with an occasional heroic dose of castor-oil.

"Morning sickness" is sometimes relieved by an early cup of tea taken before getting out of bed. I have found working men most considerate in this matter, and quite ready to light the fire and make the early cup of tea for their wives.

A few words on the excretory work of the lungs and skin, and the value of pure healthy blood during pregnancy will do much to help women over their fear of soap, water and fresh air; and often start hygienic habits that will be carried on through life.

Try and persuade women—and if you have a chance say a word to the husbands, for they generally are the greater offenders in this matter—of the importance of

sleeping and working in rooms with open windows. In no part of your work, Ladies, will you need to exercise more discretion and tact than in this matter of fresh air. Remember what cold and damp mean to people who have to economise their fuel; also human nature to-day as much as in Naaman's time resents being told to do simple things. Occasionally I have succeeded in so suggesting an improvised ventilator that the man thought it was his own idea. A husband generally does not resent being told that his wife needs fresh air, it shows at least that you recognise him as her natural protector; secondly, ninety-nine out of a hundred men fancy that they know something about carpentering (women labour under a similar delusion regarding darning). Bearing these two facts in mind, one can usually succeed in having the absolutely closed window replaced by some sort of Hinckes-Bird or other ventilator (*vide* Lect. iv.).

In the case of a first baby you may be consulted about the infant's dress, and can then point out that, besides the advantage of wool to the baby, a knitted vest puts less strain on the mother's eyes than the early Victorian cambric shirt with its fine sewing.

Also in the case of a first child it is wise for a woman to prepare her breasts some months before the infant's arrival. Spirits and water or cold tea is usually used in this country. Personally I prefer the American method of an emollient (lanoline would do) to that of an astringent.

Women who are obliged to stand much would do well when resting to raise their feet, and to wear a wide flannel bandage so as to support the lower part of the abdomen.

If varicose veins or swelling of the legs appear they should also be bandaged.

Advise women while pregnant (also girls during their monthly periods) to avoid hanging up curtains, throwing clothes over a clothes-line, etc.; the arms raised over the head and stretching upwards may cause uterine troubles, and the lowering of a clothes-line is a simple matter.

Women, whose work is sedentary, should be encouraged to take moderate but regular exercise.

While nursing, a woman should be careful to sponge her breasts before and after putting the baby to them, and wear a breast shield should the nipple crack. Borax and glycerine may also be painted over the fissures.

Oatmeal, milk, eggs, lentil or pea soup may be recommended as good milk-formers. Experiments have shown that milk is wonderfully little affected by diet, the only appreciable difference is found in a diet rich in proteids, which generally makes the milk rich, as bean-fed cows produce more cream. The main thing is to keep the woman healthy, and then her milk will generally be good in quality.

LECTURE II.

INFANT FEEDING.

Ladies,—Improper and irregular feeding are responsible for not only a high death rate among infants but also a large percentage of ill-nurtured and delicate children.

An infant should be put early to the mother's breast, in fact as soon as ever the woman is rested. Not indeed that the new-born babe needs food for a day or two, but stimulating the breast aids in contracting the womb, and with a first child it is an advantage to the woman to have the nipples drawn out while the breasts are still tender.

Though the infant does not get its proper supply of milk for a couple of days it does get from the mother colostrum, a purgative milky fluid, which dispenses with the necessity of a teaspoonful of oil so much beloved of village "Gamps". A child should not be allowed to take too much colostrum; if the milk is slow in coming and the babe thirsty a little warm water and sugar (if possible lactose, though Demerara sugar may be used) can be given. Cane sugar is liable to ferment and cause acidity, therefore lactose or even a little honey is preferable; or cane sugar boiled in water—just enough to sweeten the water—may be used. In the process of cooking some of the cane sugar is converted into glucose,

a form of sugar more easily dealt with by the digestive organs.

The baby's mouth and the mother's breasts should be kept scrupulously clean; "thrush" and other diseases come from neglect in these matters or from a dirty feeding-bottle.

When possible it is desirable that the woman should nurse her baby; of course consumptive or scrofulous women, and those suffering from certain nervous complaints, are not fit to nurse. Should a woman feel faint each time the baby is put to the breast, or should she notice the baby is not gaining in weight, she ought to consult a medical man.

In the professional classes where women marry nearer thirty than twenty it often occurs that a woman finds herself unable to nurse, or only able to give a few meals from the breast, the remainder may be made up with properly diluted cows' milk (*vide* schedule). There is no foundation for the old-fashioned prejudice against giving cow's milk with breast feeding. Women working in factories, etc., may also find themselves unable to bring up the child entirely on the breast, in which case they would do well to have their babies bottle-fed during factory hours, and nursed before and after these hours.

The feeding bottle should be *tubeless*, and of a shape that can be easily cleansed (Maw's, Allenbury's and the Rotunda bottles answer these requirements). The glass bottle can easily be scalded, and the teat can be placed in a muslin bag and boiled, or if the shape permits it turned inside out and scrubbed.

Uneducated women often prefer the old-fashioned long tube bottles, as they can be placed in the cradle and the baby allowed to suck away, while the mother continues

her household work. In France, and some of the American States, these rubber-tube bottles are illegal; they are a fruitful cause of diarrhœa and vomiting; for not only are the bottles difficult to keep clean (the tubes requiring to be daily boiled), but a baby lying on its back, as is usual in a cradle, is not in its natural position for feeding and is more liable to be sick. Whether hand-fed or breast-fed the baby should be on its side as at the mother's breast, and care should be taken to see the child does not drink too quickly, as this tends to produce vomiting. "Possetting" or regurgitation from a too full stomach need not cause alarm, but should be avoided through more careful feeding. Babies at the breast occasionally burrow their little noses into the mother's flesh so that breathing becomes impossible; feeling suffocated, the infant grows frightened, lets go the breast and roars. I have seen this happen three times in seven minutes; I refrained from speaking in hopes the mother or grandmother, both of whom were watching the infant, would discover the cause; between them these two women had borne, I believe, nineteen children, yet the grandmother said it was "wind" and the mother said the little fellow was liable to these "fits" whenever she put him to the breast, she thought her milk could not suit him. Probably the child would have been weaned at three weeks old had I not interfered. How many of you, Ladies, have heard women in the district say they could not nurse their babies because they had "windy milk"? The woman may be taking porter, which sometimes does cause the baby discomfort, but the more common cause of true flatulency is irregular feeding, without a proper interval for digestion.

During the first six weeks a mother should nurse or

bottle-feed her infant every *two hours* between 5 A.M. and 11 P.M., if necessary waking up the child for the meal. While between 11 P.M. and 5 A.M. it should only be fed if it awakes itself, and only once or twice during that time; the sooner the baby learns to sleep through the night the better, as it gives the digestive organs more chance of resting. After the first six weeks, if the infant is healthy, the two hourly meals may be extended to two and a half hours, and at three months old to every three hours. At the end of the ninth month the process of weaning may be commenced, and should be completed in a month. Of course if the child is teething or otherwise upset it may be necessary to postpone the weaning a few weeks, but the breast ought not to be given after twelve months old, as it is bad for both mother and child.

WEANING.

Hours.	1st Week.	2nd Week.	3rd Week.	4th Week.
5 A.M.	Breast.	Breast.	Breast.	Breast.
8 ,,	Milk.	Milk.	Milk.	Milk.
11 ,,	Breast.	Breast.	Milk.	,,
2 P.M.	,,	,,	Breast.	,,
5 ,,	,,	,,	Milk.	,,
8 ,,	,,	Milk.	Breast.	,,
11 ,,	,,	Breast.	Milk.	,,

The milk should be diluted as for a child of six or nine months old.

Bottle-fed babies, like those suckled, should also be fed regularly every two hours, two and a half hours or three hours between 5 A.M. and 11 P.M., according to age; and if necessary awakened for meals.

Ladies, you will find great opposition even among educated women to this regular feeding. Eight out of every ten women think it "*unnatural*" to wake a sleeping infant; it is equally *unnatural* to bathe or dress a baby.

Infants are creatures of habit, and the waking will probably not be necessary after the first fortnight or three weeks; by that time the child will itself have got into regular habits. Between 10 P.M. and 6 A.M. the longer it sleeps the better. A new-born babe generally sleeps twenty-two out of twenty-four hours; older infants sleep less. But even at a year old a child needs fourteen to sixteen hours' sleep, and at two years old quite fifteen hours' sleep.

If a child cannot be nursed, the best substitute for the first seven months is cow's milk properly diluted; but at best this is far inferior to the milk of a healthy woman. Should cow's milk properly treated not agree, then the child ought to be shown to a medical man, and only under his guidance should artificial foods be tried. Most of these foods are expensive and beyond the means of the poor, while many of them are quite unsuitable for infants' food.

An analysis of human milk and cow's milk shows such qualitative and quantitive differences that, to quote Dr. Robert Hutchison, "a truly humanised cow's milk is a chemical impossibility".

Not only is cow's milk richer in proteid and mineral matter—we generally find the quicker an animal grows the richer is the mother's milk in these constituents—but the character of the proteid and mineral matter differs in the two milks. A most important factor in infant nutrition is phosphorus; it is found in cow's as well as

human milk, but in the latter in a form more easily assimilated; while the proteid of cow's milk gives a denser and less digestible clot than that of woman's milk. Human milk is also richer in sugar and slightly less rich in cream; its fat, however, has a lower melting-point, and is therefore more readily assimilated.

Chemical Composition of Human and Cow's Milk.

	Human.	Cow's.
Water - - - -	87 to 88 per cent.	87 to 88 per cent.
Proteid - - -	1 to 2 ,,	2 to 3 ,,
Fat - - - -	3 to 4 ,,	$3\frac{1}{2}$ to $4\frac{1}{2}$,,
Sugar - - - -	6 to 7 ,,	4 to 5 ,,
Mineral matter - -	0·1 to 0·2 ,,	0·7 ,,
Reaction - - -	Alkaline.	Acid.

—Copied from R. Hutchison.

The problem is how to convert a milk differing so much from human milk into a suitable food for infants. Firstly, to kill possible pathogenic microbes we should pasteurise or boil the milk; human milk as it leaves the breasts is sterile. The advantages of boiled milk, especially in our cities, far outweigh its disadvantages. The chief drawback to sterilised milk is that it has lost its anti-scorbutic property, and if used for long will, like condensed milk or the patent foods, often produce scurvy; an evil that can easily be avoided by giving the child orange or grape juice a couple of times a week. Dr. Hutchison recommends scalded not boiled milk, that is, milk brought to the boil, and then set aside to cool. It should be left covered while cooling, and until used carefully protected from dust. If cooled rapidly and strained there will be but little alteration in the taste.

Secondly, to render the curd more flocculent (for it is the dense curd of cow's milk that so often makes it disagree with babies), lime water or barley water should be added to the feeding bottle. Lime water is slightly constipating, but being an alkali it helps to neutralise the milk, which is generally acid. Barley water, on the contrary, is a laxative; it unfortunately contains starch, which cannot be readily digested until the child is six or seven months old.

Diluting milk lessens the cream and sugar, as well as the mineral matter and proteid, and as cow's milk is deficient in sugar, and (after dilution) in cream, it is necessary to add these two to bring the mixture up to the required standard; the whole should be warmed to blood heat (98° to 99° F.).

When cream cannot be obtained cod-liver oil should be given twice a day, about thirty drops at a time, or three doses of twenty drops each may be added to the feeding bottle. A lack of fat in the diet tends to produce rickets, a disease very common in this country, and responsible not only for many bone deformities, but also for catarrhs of the lungs and digestive organs.

The following diet sheet may be useful as a general outline, but both in quantity and strength the mixture may have to be varied for individual babies.

FOOD CHART FOR BOTTLE-FED INFANT.

	1st Week.	2nd Week.	3rd Week.	4th Week.	2nd Mth.	3rd Mth.	4-6 Mths.	6-9 Mths.
Boiled milk, cow's	2 tea-spoonfuls.	3 tea-spoonfuls.	4 tea-spoonfuls.	5 tea-spoonfuls.	1 oz.	1½ oz.	2 oz.	3 oz.
Boiled water -	5 tea-spoonfuls.	6 tea-spoonfuls.	7 tea-spoonfuls.	8 tea-spoonfuls.	1 oz.	1½ oz.	1½ oz.	—
Sugar - - -	1 lump.	1 large lump.	1 lump.	1 lump.	1 lump.	1 lump.	1 lump.	1 lump, very large.
Lime water -	1 tea-spoonful.	1 tea-spoonful.	1 tea-spoonful.	1 tea-spoonful.	3 tea-spoonfuls.	4 tea-spoonfuls.	4 tea-spoonfuls.	1 tea-spoonful.
Cream - -	1 tea-spoonful.	1 tea-spoonful.	1 tea-spoonful.	1 tea-spoonful.	2 tea-spoonfuls.	3 tea-spoonfuls.	4 tea-spoonfuls.	4 tea-spoonfuls.
Barley water -	—	—	—	—	—	—	—	2½ oz.
Total each feed -	9 tea-spoonfuls.	11 tea-spoonfuls.	13 tea-spoonfuls.	15 tea-spoonfuls.	21 tea-spoonfuls.	31 tea-spoonfuls.	32 tea-spoonfuls.	49 tea-spoonfuls.
Total, 24 hours -	11¼ oz.	13¾ oz.	16¼ oz.	18¾ oz.	21 oz.	27⅛ oz.	28 oz.	42¾ oz.

TIME CHART.

Infant's Age.	Meals per 24 Hours.	Commencing.	Interval between Meals.	Quantity per Meal.	Total.
		A.M. P.M.			
First 4 weeks -	10 feeds	5 - 11	2 hours	1-2 oz.	10-20 oz.
During 2nd month	8 ,,	,,	$2\frac{1}{2}$,,	$2\frac{1}{2}$,,	20 ,,
2nd to 9th month -	7 ,,	,,	3 ,,	3-6 ,,	21-42 ,,
10th month - -	7 ,,	,,	3 ,,	6 ,,	42 ,,
11th ,, - -	6 ,,	5-10.30	$3\frac{1}{2}$,,	7 ,,	42 ,,
12th ,, - -	5 ,,	5-10	4 ,,	8 ,,	40-45 ,,

As to quantity and strength no hard and fast rule can be made, the above is only as an outline, the idiosyncrasies of each infant should be considered.

Should a child be unable to digest milk, whey and cream may be tried, and when an infant has to be hand-fed from the moment of its birth the following mixture may be used for the first week:—

Whey,	1 tablespoonful.
Fresh cream,	$\frac{1}{2}$ tablespoonful.
Boiled water,	1 tablespoonful.
Sugar,	1 lump, or better still, a full teaspoonful of lactose.

After the first week new milk may be gradually added, the whey and cream being decreased and a little lime water added until the child is able to take mixture number one.

If fresh milk cannot be obtained condensed milk may be used—it often suits an infant even better than new milk. Theoretically the unsweetened brands containing the whole of the cream (the "Viking" and the "Ideal") are the best; but once opened they keep less well, and in small country towns are more difficult to obtain. Nestlé's,

which contains sugar in excess and therefore keeps better, is very popular, but diluted for an infant is poor in fat, therefore to each meal a teaspoonful of fresh cream should be added. Dr. R. Hutchison recommends the following preparation :—

Nestlé's milk,	1 teaspoonful.
Fresh cream (centrifugal),	1 teaspoonful.
Boiled water,	6 tablespoonfuls.

Ladies, you will notice in the various milk mixtures mentioned for children under six months the only carbohydrate employed is sugar; in this we are following Nature—the mother's milk contains no starch; yet in the district you will find many mothers who delight in giving babies of a few weeks old cornflour and milk, or bread or rusks and milk. Of course there are bolder spirits that give the baby "a little of whatever they are having themselves," pork-pies and green apples being specially in demand. I equally discourage cornflour and pork-pies, and have up to the present always had the support of the medical profession.

It is only after the child has commenced to cut its teeth that the digestive juices, which specially act on starch, are properly secreted. Therefore foods, patent or otherwise, containing starch, are best not employed until the child is eight months old, and even then should be given moderately and with discretion.

Neave's and Ridge's foods both contain starch and are therefore unsuited for children under seven or eight months old. There are, however, as Dr. R. Hutchison has pointed out in his book on Children's Diseases, a few exceptional children whose starch-digesting capacity is in excess of their capacity to digest milk. Frame food contains starch, but is also rich in proteids, and if you

find a mother with a passionate desire for a patent food (such women do exist), you may recommend this, plus plenty of new milk, provided the child is seven or eight months old. Allenbury's and Mellin's foods are suitable for infants under seven months, as they contain no unconverted starch; both, however, are poor in fat, especially Mellin's, therefore cream or cod-liver oil should be used with them. I never recommend patent foods to people of limited means; but if you have an opinion on infant feeding and work among mothers you will probably find you are expected to have an opinion on every imaginable patent food, it may therefore be useful to you to know what Dr. R. Hutchison, who has analysed most patent foods at present in the market, says on the subject: "I admit that some children may be reared successfully on certain patent infant foods, but hardly ever if condensed milk and other methods of feeding have been properly tried and have failed".

What should a child of a year old have? On the whole I prefer them not having beer, strong tea, or fried eggs. I knew a baby in Bedfordshire not quite fourteen months old, who on its deathbed demanded a fried egg I give the story as the mother gave it—taken at their own valuation mothers are mere tools in the hands of their babes) and refused a boiled egg (Why should "a dying baby" have a boiled egg?) and then "asked for" a fried egg and devoured it! I can vouch for the infant being quite alive the following week.

For the first two years of its life milk should be the basis of a child's dietary, but from ten months onward the meals may be varied by the addition of broth, soft boiled eggs (these broken into a cup with bread crumbs and salt are generally popular with young children),

strained oatmeal, bread, farinaceous puddings, and later on floury potatoes well mashed with milk or butter, well-stewed fruit minus seeds and skins, finely chopped greens (best if passed through a hair sieve), minced meat, and plain, boiled fish; these additions should gradually be introduced. Of course you will have to use your discretion as to what you recommend, bearing in mind not only the child's age, but the financial condition of those whom you address, new milk, oatmeal, and eggs forming a good working basis.

Personally I object to children under two years old getting unstrained oatmeal, coarse bran-containing brown bread, or jams full of seeds and skins. The lining of a child's intestine is very delicate, and the constant irritation set up by indigestible cellulose matter or seeds may result in chronic inflammation and intestinal catarrh; if an aperient is necessary it is safer to resort to gentle massage of the abdomen from right to left; or the daily use of a little cod-liver oil.

At all ages children should be fed regularly (at twelve months old an interval of three and a half hours may be allowed generally between meals), and at all ages children should be protected from decaying food and dirty water.

LECTURE III.

SCHOOL LIFE.

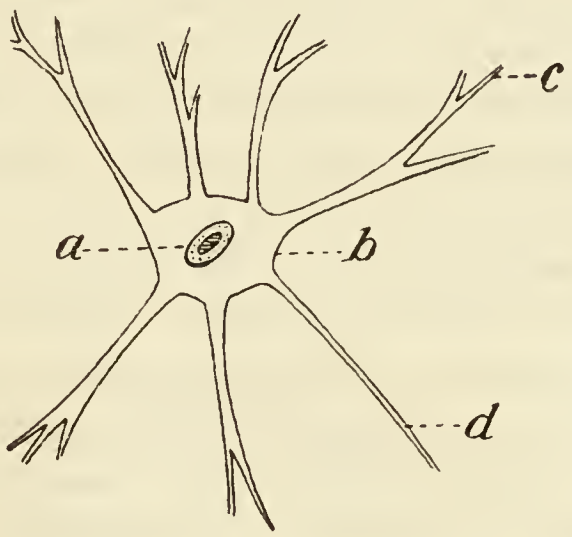
Ladies,—It is impossible in a short course of lectures like these to enter fully into the question of heredity and environment, but I would remind you that heredity is not a simple combination of traits inherited from parents. You must remember a child inherits from all its ancestors, and, as Darwin has pointed out, the effect of cross-breeding is often to set free certain ancestral traits; this brings us face to face with a very complex process—a tangled heredity where ancestral elements act and react, and combine, so that we can be sure of very little beyond, perhaps, a certain *predisposition*.

I would not have you undervalue good stock, far from it. A predisposition towards health, sanity and vigour is not to be despised; yet a predisposition towards delicacy, insanity and weakness may be largely combated by hygienic environment—mental and physical. Environment, pre-natal as well as post-natal, plays an important part in the child's development—remember physical life commences at conception, not at birth. Ill-health in the mother, injuries due to accident, shocks, etc., during gestation are all means of lowering vitality in the offspring.

The struggle for life around us is not greater than the struggle of the cells within our own bodies. The stronger

growing at the expense of the weaker tend to produce an ill-balanced organism, and when this takes place with brain cells, the result may be an idiot or a genius.

Most women have observed the involuntary twitchings of a young infant's fingers and toes. Has it ever struck you that these movements point to brain activity? Recent investigations have led scientists to believe that at birth the brain contains all the nerve cells it will ever possess—but these and the nerve fibres are in an im-



NERVE CELL.

(*a*) Nucleus.
(*b*) Nerve cell.
(*c*) Branched processes.
(*d*) Nerve fibre.

mature condition. During the first eight or nine years, especially during the first year of life, brain growth and development progress rapidly; later the process goes on more slowly, the female brain usually reaching its full maturity at about thirty years of age, the male brain about thirty-five.

At first the brain cells are more or less separate from one another, but as they bud and put out little processes, which for convenience we may picture as branches, and

since these branches in their turn put out branchlets, we have a veritable forest; the cells being connected with one another through the intertwining processes. The shape of the cell and the number of its branches have a most important bearing on the nervous activity of the person. Besides these branch processes each cell throws off a single unbranched process, which becomes a nerve fibre and uniting with other nerve fibres forms a nerve, connecting the brain with the body.

The twitching of a baby's fingers and similar movements not dependent on outside stimuli are called "spontaneous movements" and are indicative of brain activity. The nerve cells, as the result of their nutrition, generate force, and this force carried along nerve fibres causes visible movement through contraction of the muscle in which the nerve fibres terminate. Spontaneous movements are common to all young animals, and even the roots and leaves of young plants are not absolutely still.

Gradually as the child's brain matures, we observe control of these movements. At first the control is but for a few seconds, then as the budding cells co-ordinate we find voluntary movements following outside stimuli—as when the stimulation of the brain through the action of a brightly coloured toy upon the optic nerve is followed by an attempt to grasp the toy. The unripe nerve cells and fibres are already rapidly maturing, and that they may do so properly the brain demands pure and abundant blood, stimulation and rest. A mother's caresses, the objects in the room, the daily excitements of washing, dressing, feeding and going out of doors offer sufficient stimulation—it is not necessary to leave the baby in a perambulator in the corner of a busy street, as suggested by a modern social reformer! Healthy sleep in pure air

gives rest, but that the nutrition may be complete it is all-important that the child be properly and regularly fed.

In size and complexity the brain develops rapidly for the first eight years; the senses develop earlier than the intellectual powers. Hearing is rarely fully developed before eight or nine years of age; few children have mature sight before ten or twelve; the senses of taste and smell are earlier developed, while that of touch exists in an elementary way even before birth.

In the Kindergarten an attempt is made to train the growing senses, and encourage the spirit of inquiry, which is natural to all healthy young children. Unfortunately in some schools we find the teachers forgetting the immature state of the infant senses, and giving the little ones small beads to string, cards to prick or outline, etc. Let me read to you what Oppenheim says on the subject in his *Development of the Child*: "There is little doubt in my mind that these games (Kindergarten weaving, plaiting and threading) are decidedly harmful. In the weak and immature condition of such children's eye-muscles, body muscles, and nerve cells, the efforts required sufficiently to perfect motor accommodation to attain the desired end must unquestionably lead to strain and consequent exhaustion."

Nerve cells in young animals become rapidly exhausted, and monotonous strain instead of strengthening them through exercise simply wears them out, and is as hurtful as a blow on the head or morbid changes in the digestive organs. The result is, the child's mind and senses do not work in unison, and the power of observation is dulled.

Building sandcastles, rough and ready modelling in clay, and brush work as now taught in good Kinder-

gartens are excellent exercises for the child's developing senses and muscles, and put no undue strain on the eyesight. Children can very easily accommodate their sight to near objects, but having to do so constantly, especially for fifteen to thirty minutes at a time, tends through wearing out certain muscles to produce near-sightedness.

I have a strong objection to children getting regular reading and writing lessons before five to six years of age. The faculty of observing, the spirit of investigation, and the speech centres are all developed early, and bearing this in mind we can help a child to learn a great deal before six years of age without worrying him with reading or writing.

Happy the child that has a shallow stream beside his house or school, and happier still the infant whose parents or teacher will use the rivulet to awake an interest in physical geography and natural history.

You have no doubt all noticed how children love to imitate their elders, to do "real work"; it seems to me a great deal more might be done with this natural taste of the child's —gathering broken twigs for firewood, drying, and at a later age washing spoons and forks, or looking through the laundry basket for stockings with holes or pinafores without buttons, are all delightful at three and four years old; and there is an ethical as well as intellectual value attached to such play-work. A child's motives for wishing to be helpful are far too complex to analyse! But such work quite as really as Kindergarten games develops observation, and assists co-ordination.

By co-ordination I mean the different parts of the brain acting in unison—it is lack of co-ordination rather than lack of strength which prevents the young infant

walking. Physical training not only develops the muscles, but through the motor nerves acts on the motor centres, which are in communication with all the other parts of the brain—we generally find dull children much improved by good physical exercise.

To return to our metaphor of the nerve cells and fibres in the brain forming a forest. You can picture nerve currents finding a way for themselves through this forest —such currents travel preferably along the route of least resistance, *viz.*, where currents have repeatedly passed—so habits are formed and a permanent condition created through repeated impressions on the brain. The man who has in his daily life thought of others before himself is not likely in a great emergency to act selfishly; in the stress of the moment his brain energy will choose the paths of least resistance.

I think grown-up people in their dealings with little children very often forget that much energy may be wasted through fear, shame, sorrow and other emotions in improper measure. Children feel intensely and they despair as no sane adult can despair, they have not lived long enough to know the experience that worketh hope. Few people realise the wear and tear that even the most carefully brought-up little child must daily experience.

A great deal of so-called naughtiness and stupidity is due to nervous irritability or poisoning through indigestion. A child suffering from constipation is liable to have his blood poisoned by toxins absorbed from waste matter that has not been eliminated, and this impure blood circulating in the brain upsets the whole nervous system. Children subject to epilepsy should be specially protected from constipation, or other digestive troubles. Ill-nourished children are very liable to be untruthful,

partly through fear, partly through the ill-nourished senses not functioning accurately. Cod-liver oil and petting are generally the best punishments for such untruthfulness. I object to using the word untruthful to a child—undoubtedly children, who are easily frightened, do occasionally try to deceive—still I think it is wiser for an adult to take the deception as a stupid or inaccurate statement, and point out the advantages of accuracy for the future.

Young children, like dogs, are very sensitive to inflexions in the voice. I knew a Kindergarten mistress who kept her whole class in order through varying tones in her voice; the severest thing I ever heard her say was "Oh, that is stupid, Johnny," this, when he was disturbing the whole class through some infantine practical joke.

No child after being punished should be expected to do his lessons well; during mental depression brain activity is generally lowered. Despite recent experiments there is much yet to be learnt about the effect of different emotions on the varying blood tension in the brain—as a matter of every-day experience we all know how much easier it is to learn when feeling cheered by encouragement than when depressed through fault-finding.

Exertion, whether mental or physical, is fatiguing, a fact often forgotten by teachers of the last century. An overtired body is not fit for severe mental exertion. Varying mental and physical work with intervals for rest is desirable since different nerve cells are thereby exercised. With children nerve cells easily become exhausted and therefore inability to concentrate attention for long on any one object is characteristic of youth—indeed the child's very restlessness may aid in the uniform development of all parts of the brain.

Precocious children benefit by association with normal children, and by the quiet routine of school life; while in dealing with abnormally dull or defective children it is well to remember the Bicètre rule: "Exercise the imperfect organs so as to develop their functions, train the functions so as to develop the imperfect organs".

Dulness is often the result of defective hearing or sight, or imperfect aeration of the blood through adenoids. Though the latter can only be removed by surgery, a great deal of imperfect breathing and thickening of the mucous membrane between nose and throat might be avoided by giving children good breathing exercises.

Brain overstrain in a child will generally show itself at first by sleeplessness, teeth grinding, restlessness, inability to give attention; there may also be irritability, and fastidiousness about food, later there will be often twitching of face, hands, etc., and involuntary movements not pointing as in infancy to healthy brain activity, but to a deranged nervous system where the controlling nerves no longer exercise their restraining influence.

Causes of Brain Overstrain.

(*a*) Enfeebled general health due to malnutrition, etc.;
(*b*) Home lessons, especially if done at night;
(*c*) Schoolwork badly arranged;
(*d*) Punishments;
(*e*) Examinations;
(*f*) Return to school too soon after fevers, injuries to the head, etc.

Information reaching a child through several of his senses is more easily grasped and more readily remembered, moreover there is less fear of brain overstrain. A rapidly growing child often mentally develops but slowly,

as if there were almost an antagonism between physical growth and brain development; such children should be specially protected against overstrain.

Most normal children have some imagination and the gift of visualising; much may be done through the proper cultivation of these faculties in rendering lessons easier, and later in life both may become the handmaids of sympathy.

Besides overwork, schools are occasionally responsible for defective eyesight, and evils arising from bad school postures. A desk too low means round shoulders, contracted chest, possibly congestion of the head and near-sightedness. The sloping writing taught to early Victorian scholars was conducive to lateral curvature through throwing the left shoulder forward—a similar defect may be brought about by always crossing the same leg, or carrying a satchel always at the same side—desks too high may also cause lateral curvature. Seats too high and two narrow generally produce "pins and needles" through compression of the vessels and nerves at the back of the leg; while on a seat too low the body is cramped up. Seats without backs are apt to make pupils lean forward. The difference between the height of the seat and the desk should be the length of the child's forearm, about a sixth of the pupil's height—for writing, desks should be sloped about 30°, for reading, 40°-45°, and books ought to be held ten or twelve inches from the eyes. The height of the seat from the floor should be the length of the scholar's leg from sole to knee, the seat should never be less than eight inches wide, and there ought to be a support for the back. The distance between the edge of the seat and a perpendicular line dropped from the front of the desk should be one inch for reading, and zero for

writing. Single desks are in many ways better than dual or long desks.

Defective vision is often caused by (*a*) insufficient light, (*b*) imperfectly printed books, (*c*) needlework or prolonged exertion in focussing near objects; also defective general health will affect the eyes.

Blackboards ought to be dull and not on the same side of the room as the windows. Schoolrooms lighted from the left protect the pupils' eyes from a glare, and the copy book or lesson book from a shadow.

You will do well, Ladies, to discourage infants under five (better still if six were the age limit) from attending elementary schools. Of course exception may be made where homes are very unhappy or unhygienic. Little children are very susceptible to infectious diseases; a number of small children crowded together in rooms not too wisely warmed and often not well ventilated, deprived of the midday sleep that all children should have up to six or seven years of age, and constantly obliged to sit in damp clothes, are not in the condition most conducive to healthy mental or physical development.

It has always seemed to me a very great pity that while in higher grade schools so much is done for the encouragement of outdoor exercise, so little has been done in the primary schools. Organised games among primary school girls, especially among seniors, are quite the exception; while cricket and football, occupying so much time at our public schools, are but feebly encouraged among the very class of boys to whom the discipline and exercise would be invaluable.

Muscular exercise not only affects the general health through increasing lung action, strengthening the heart and muscles, rendering circulation uniform, while the

increased activity of the skin eliminates waste matter; but it has a direct effect on the brain through the motor centres, where ideas of weight, distance, resistance, etc., are stored.

Swimming is an excellent form of exercise, and both adults and children should be encouraged to use the public baths in their neighbourhood. In some places it is customary on certain days in the week to let the water in the swimming baths run low, so that children may bathe without risk of drowning; an excellent plan that might with advantage be introduced into all towns.

It is needless to remind an audience such as the present that cleanliness of person as well as surroundings is desirable. Children's teeth do not merely need to be kept clean—washing them on going to bed is even more important than in the morning—they should also be well exercised. The soft food used by all classes does not half exercise the teeth; children should be encouraged to eat hard crusts, biscuits, toast and raw apples. Thus the blood supply to the teeth is increased and they have more chance of developing properly. In those ranks of society where table manners necessitate each piece being cut of a size to conveniently fit the mouth the front teeth have no chance of exercise. Soft bread supplied fresh each day is, I am certain, largely responsible for the corruption of modern teeth.

In childhood, as in infancy, warmth is essential to healthy growth, yet clothing should not be heavy as it soon tires a child, and impedes that activity which is characteristic of healthy youth; for this reason a pair of warm knickers are far better than two or three petticoats. In district work I have rarely succeeded in making people realise that the garment worn next the skin, be it

cotton or flannel, should be washed at least once a week, and the garment worn all day should not be also worn all night. "Head cool, feet warm," is a wise rule ; garments that interfere with circulation, respiration or otherwise impede growth are necessarily bad. Flannelette is far too inflammable a material to be safe for frocks or outside garments.

Lastly, Ladies, let me remind you that sleep plays an important part in child life ; a child of four or five will probably sleep twelve to thirteen hours ; even children between ten and thirteen should have ten hours, and that the sleep may indeed be restful and recreative the child should have abundant oxygen while resting.

Well has it been said of heredity and environment "that if to the former a child owes his possibilities, to the latter he owes his realisation of these possibilities".

LECTURE IV.

THE DWELLING.

Ladies,—Whether as poor law guardians, district visitors, or patronesses of orphanages and charitable institutions you are constantly brought into contact with housing problems. Possibly in your own homes you have been troubled by structural defects or puzzled by the network of pipes that disfigure the modern house.

The particular form of the dwelling must depend on the uses for which it is required, its site, and the materials employed in its construction.

A permeable soil such as sand or gravel, provided it is of considerable depth, has not only the advantage of being drier than clay, but also warmer; chalk though dry is less absorbent of heat than sand or gravel.

Permeable soils when not very deep may become waterlogged, the substratum of clay or of limestone being but little absorbent holds water, which the shallow porous soil reabsorbs as a sponge would.

Besides water, soil contains air, and when the subsoil water rises, the ground air is forced upwards. This ground air is *always impure*, a fact easily realised when we remember that the earth's soil is a great purifying laboratory for the waste products of the animal and vegetable worlds. Moisture aids putrefaction, therefore the ground air of damp soils is usually less pure than

that of dry soils. Soils in the neighbourhood of houses and "made" soils are specially dangerous. As cities grow we often find that what has once been the rubbish heap of the town, gradually becomes the site of the extending city; the effluvium arising from this "made" soil is most pernicious to health.

To protect houses from ground air as well as damp, the entire site within the outer walls should be covered with asphalt or cement concrete. In town houses this cemented floor when asphalted or paved may form the basement.

Bricks being porous, damp may rise by capillary attraction from the foundation up through the walls; to prevent this a layer of glazed tiles or slates set in cement or some bituminous preparation should be inserted between the wall bricks just above the ground line, and above this "damp proof course" and below the beams supporting the first wooden floor ventilating bricks are usually placed, so as to prevent dry rot. It is important to see these ventilating bricks do not get filled up with dirt and dust, more especially if no concrete nor asphalt has been used to cut off the ground air from the house. The ground floor should in such a case be raised at least two feet above the soil, and the underlying space be thoroughly ventilated by air-bricks in the external walls.

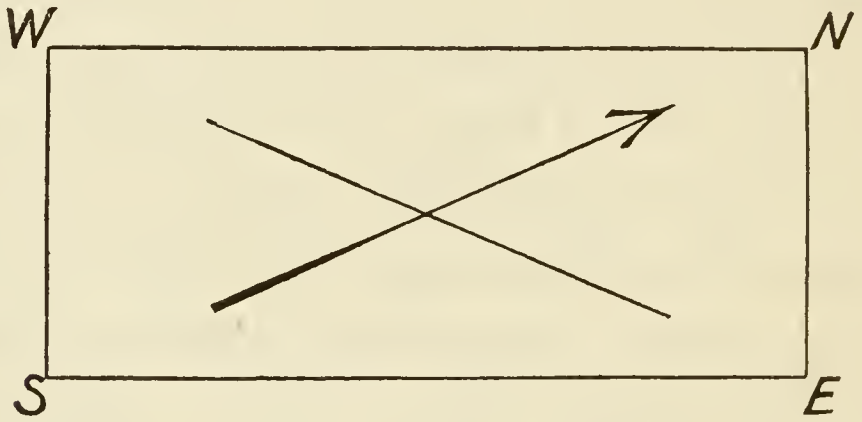
Badly drained soil, ground floors and walls not properly cut off from rising moisture, and walls exposed to driving rain not protected by Portland cement nor brickwork, etc., are often causes of damp, cold houses. Damp houses must of necessity be cold, since evaporation from the walls means heat drawn from surrounding objects.

Walls built of soft porous bricks and bad mortar, defective gutters, broken rain-water pipes, and lack of

ground paving immediately surrounding the house are common causes of damp dwellings among the poor.

Concrete walls occasionally "sweat," this is due to the warm air of the room condensing on cold walls, for concrete is a cold material.

In this country there is no fear of a house getting too much sunshine, therefore terrace houses are best when facing east and west, while detached houses with their corners facing the four points of the compass give a N.W. and S.E. back and front both securing sunshine, a S.W. aspect always warm, and a N.E. side always cold, but



not devoid of sunshine, and serving excellently for larders, dairies, etc.

Schools require a great deal of sunshine, as it is an important factor in child health. The principal light in a schoolroom should be on the left of the pupil, so as to avoid shadows when reading or writing. Both in schools and private houses windows ought to be carried to within a foot of the ceiling, and the glass, irrespective of window-frame, should be about one-tenth the floor space. Curtains and window-plants would be best avoided, or at least judiciously employed when windows are small. Windows are intended for opening, though builders occasionally forget this fact, especially in churches and public buildings.

If gas is employed as a means of artificial lighting, the pipes should be constantly examined for pin-point leakages. Even new pipes suffer from these pin-points, while they are almost a daily occurrence where pipes are at all old. The leakage is generally so small that one does not notice a smell of gas, but in time decomposing gas collects in the neighbourhood of the leak and infects the room. Though a disagreeable smell is observable it rarely is recognised as gas by the occupants, but it is always injurious to health.

While light given by candles, oil lamps, and gas necessitates combustion with its consequent absorption of oxygen, and pollution of the air by combustion products such as carbonic and sulphurous acid, electric light consumes no oxygen, does not vitiate the air, and produces but little heat.

Where gas is used incandescent burners are best, for the non-luminous flame, noticed as a darkness between the old-fashioned unmantled burner and the light, is utilised in the incandescent burner—its great heat rendering the asbestos gauze mantle incandescent. Thus with a minimum of gas a maximum of light is produced, also less heat escapes into the room.

In this country most private houses are heated by an open fireplace in which two-thirds of the heat usually goes to waste through imperfect combustion or defectively constructed fireplaces. Bonfires on the ground and peat-fires on the hearthstones, as seen in Irish cabins, have no under-draught, save that due to the fuel being placed at an angle with the ground. The open bars and under draught of cold air common to early Victorian grates is ridiculous and wasteful. A hot-air chamber beneath the grate aids slower and more complete combustion, and

"Economisers" are for this purpose, and not, as many tradesmen and ladies imagine, to conceal the ashes. So that the space beneath the grate should be really a hot-air chamber, it is important that the "Economisers" should fit perfectly and be free of all ornamental perforations, which at once admit cold air. Fire-clay and tiles ought to replace metal in the neighbourhood of the fire, since they radiate heat better and retain it longer; the back of the fire sloping outwards increases radiation, and the chimney may be narrow to cause a good upward current. As far as possible chimney flues and fireplaces should be built on an inner wall, so that the heat escaping up the chimney may be utilised in warming other rooms. Many grates now have a fire-clay chamber behind the fireplace fed by fresh air from without; this warmed pure air enters the room, or an upper room through a ventilating inlet. Of course these are refinements that you will not find in the houses of the poor. Except in rural districts, where open peat fires are still used, you will find in the homes of the poor everything that is extravagant and undesirable in a fireplace.

Stoves and hot-water pipes are best for large buildings as they produce a more equable temperature, but they do not aid ventilation as an open fire does, and it is not at all unusual now to see a school possessed both of pipes and open fireplaces.

Fire-clay and tiled stoves are to be preferred to cast-iron ones, but both are liable to over-dry the atmosphere. Proper ventilation has a great deal to say to health. As you know, the atmosphere round us contains oxygen, which is essential to life; ozone, a concentrated form of oxygen found near the sea and on high mountains; nitrogen, which acts as a diluent for the oxygen; and a small

quantity of carbon dioxide, which is injurious to health when it exceeds 0·6 parts per 1000. Carbon dioxide is given off as well as water and organic matter by the skin and lungs of all animals ; the unpleasant smell noticed in a "close room" is due to the organic matter, not to carbon dioxide, still it is an indication to us that with the rise in organic refuse, the carbonic acid gas has also risen to a degree injurious to health, while the decaying organic matter is even more pernicious.

I need not now detain you, Ladies, with particulars of how the outside air is kept pure by means of sunshine, vegetation, winds, diffusion of gases and the varying weight of masses of air at different temperatures. The ventilation of a town depends on the width of the streets, the height of the houses and the amount of open space contained within the town. Courts surrounded by high houses become mere wells of more or less stagnant air, generally deprived of sunshine. Even in West-end houses in London I have seen such backyards, and into these courts the servants' bedrooms often open.

What wonder that young men and girls coming up from the country lose their health? If such rooms must be occupied, far better is it that the owner, generally a matured adult, who has the right to spacious sitting-rooms, and possibly possesses a motor car, should be the occupant ; it would injure his health less than that of a young housemaid.

The Local Government Model Bye-laws regulate that all carriage roads should be at least 36 feet wide and those not intended for carriages at least 24 feet wide, and that houses newly built should have at least 24 feet of frontage and 150 square feet at the back, the space at the back being the length of the house and at least 10 feet

wide, or wider if the house is more than 15 feet high. The above measurements give the very minimum space required round a house.

The Joseph Rowntree Village Trust provides each house on its estate near York with a garden *of at least* 350 square yards, while the roads are 18 feet wide with 6 feet of grass on both sides between the road and the foot-path, and trees are planted on these grass verges. Fortunately this village is to be spared monotonous terraces and dreary streets of similar houses which "cleanse the body but damn the soul". We have yet much to learn of the moral as well as physical effects of rows and rows of three-roomed municipal cottages, and blocks of artisan dwellings, provided with gas, water and Lilliputian rooms. I once knew the chairman of an urban council who seemed to think a liberality of ventilators was a substitute for cubic space! He had never seen, as I had, a family Bible effectively closing a Tobin's tube; while the merest babe can render useless a Sheringham ventilator.

An adult needs 3000 cubic feet of pure air per hour. It is generally found in this climate that if the air in a room is changed oftener than three times in the hour an unpleasant draught results, therefore the cubic contents of a living room should allow for about 1000 cubic feet of space per man, and the window and ventilating apparatus should permit of this being changed three times in every hour. Of course more than 1000 cubic feet space per man is allowed in hospitals, and considerably less—only about 240 to 300 cubic feet—in London registered lodging houses. Between these two, 1200 cubic feet for hospitals and 250 cubic feet for lodging houses, are ranged all ordinary, public and private buildings. In workhouse dormitories 300 cubic feet per occupant over twelve years

old is generally allotted ; of course the air must be changed completely several times per hour in all the above cases.

As you know, Ladies, in estimating the cubic contents of a room you multiply the length of the room by its breadth and the result by the height ; for ventilating purposes you may disregard anything above twelve feet high, for it has been found that the organic products of respiration tend to fall to the lower strata, therefore excessive height does not aid in their dilution.

Rooms must have an inlet for pure air and an outlet for foul air ; in the ordinary room the window acts as inlet and the chimney, especially where there is a fire in the grate, fulfils the part of outlet ; in addition to window and chimney a room may have ventilators as inlets or outlets. District nurses are very fond of converting their patients' windows into Hinkes-Bird ventilators—by no means the best of ventilators, but the simplest, and one the patient permits even when resenting an open window. In the case of a sash window it is made by raising the lower sash six or twelve inches, placing a tightly-fitting piece of wood in the aperture, so that the air only enters between the two sashes. The top of the lower sash being raised above the base of the upper, the entering air gets an upward tendency from the position of the inner sash, thus it mixes with the warmer air of the room before descending upon the occupants.

In letting cold air into a room it should never be forgotten that being heavier than heated air it tends to fall, or if let in low down in the room forms a cold stratum about our feet while we may be inhaling a warm but impure supply.

Cold air inlets, therefore, should always be above the

heads of the occupants of a room; warmed air inlets—in many public buildings and schools pure warm air is propelled into the rooms—should on the contrary be situated not too high up, only so far above the ground as to prevent floor dust polluting the pure air passages.

The Hinkes-Bird ventilator already described may be adapted to lattice and other windows.

With the principles of ventilation clear in your minds you will never be at a loss to convert a given window or aperture into a ventilator.

Remember cold air is heavier than warm air; that air given off from the lungs of men and animals is warm, moist and full of impurities; that a fire in an open grate tends to carry a certain amount of this foul air up the chimney, while the remainder ascends to the ceiling; that cold air rushes in under doors, up through imperfect joints in the floor and through the chinks in windows to fill up the vacuum caused by the ascending warm air, and because of this you will often find a room with windows and ventilators closed far more draughty than one where the proper inlets for cold air are open —cold air entering under doors generally tends to lie along the floor, so is not much use for respiratory purposes.

In churches and public buildings draughts are often produced by impure hot air ascending; finding no proper outlet it remains near the ceiling until cooled by the extensive glass of the closed windows, and then, impure, but cooled, it falls through its own weight upon the occupants; such a draught is generally noticed in the neighbourhood of the closed windows.

Lastly, Ladies, remember churchwardens and housewives are very sensitive on the subject of ventilation; they

need more "playing" than a trout, and the reformer who would do good had better act warily.

That much ill-health and lowered vitality with its train of moral and physical evils is due to impure air no one can doubt, but it will take time to teach people to appreciate pure air. However, open-air sanatoria have done much in this direction. Furniture occupies air space as well as collecting dust, and you who work among the poor know what a mania most of them have for huge bulky articles. The æsthetic and hygienic value of space is but little understood even among classes who speak of Art with a large A.

Dust plays an important part in health, or rather loss of health. Have you ever thought of the filth that composes city dust—country dust is not much better—and then tried to realise what the consumption of this must mean to the respiratory and digestive organs, especially the delicate organs of a young child? It is well known that city-bred children are physically inferior to those brought up in the country—may not dustless green fields surrounding the homes of the latter have something to say to better developed chests and limbs? At least in their case the struggle of growing cells has not been increased by a daily war with dust-borne microbes and irritating mineral particles.

Places where food is kept should especially be free from dust, or the food should be protected with proper covers; milk after being boiled ought never to be left uncovered. A larder, be it a room or merely a few shelves as in artisan homes, should be *clean*, *cool*, *dry*, *well-lighted*, and *with thorough ventilation*, because the micro-organisms which attack dead matter object to draughty, dry, well-lighted, clean, cool places, they work

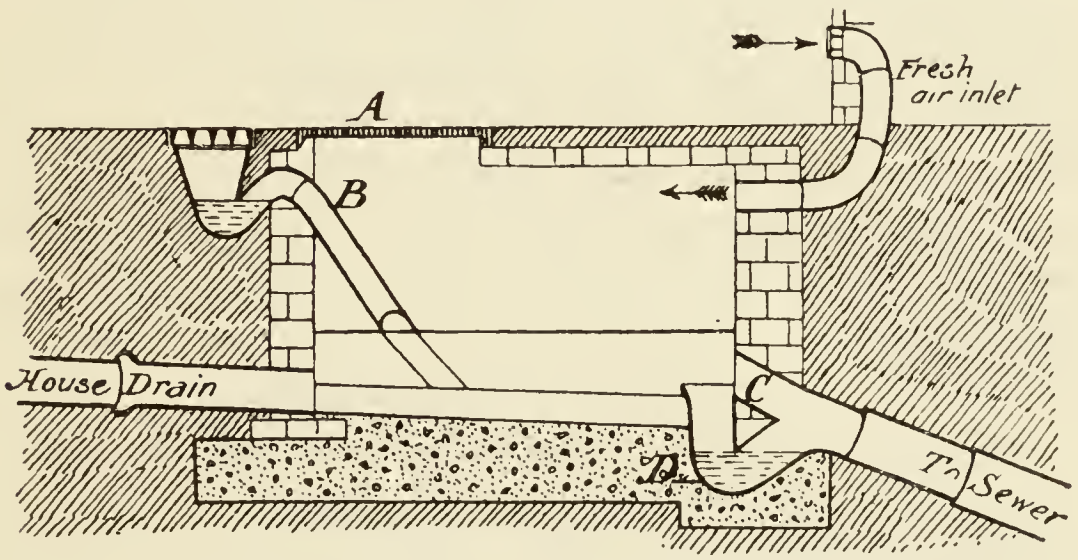
best in damp, dark, dirty, warm larders with stagnant air. Traps and sinks with waste pipes are not desirable where food is kept; yet often in large houses you find the least sanitary portion of the house converted into a larder—a dark, almost cellar-like room, next door to the servants' W.C., or as I have seen it with the soil pipe of the upstairs W.C. passing through it, is as often as not the larder of a large and fashionable house. The artisan has a corresponding dark den in the two-shelf cupboard under the stairs. Meat safes (a sugar or orange chest and a piece of perforated zinc can be so utilised) protected from dust and the weather and fixed to the outer wall of the cottage is far preferable to an indoor cupboard.

Characteristic of modern houses are the iron and drawn lead pipes disfiguring the outer walls—pipes so placed are more get-at-able and more sanitary. The rain-water pipe can easily be recognised; it is generally cut short above the iron grating of a gully trap in the yard. Carried *under* the grating of the same gully trap may be seen often two other pipes; one carries the soapy water from the bath, the other the greasy water from the kitchen sink. Both are cut off above the trap, but under the grating, not *above* it as in the case of the rain-water pipe, which merely carries clean water.

The only pipe that should disappear under ground is the W.C. soil pipe, and its upper portion ought to be carried full bore above the roof, and should be away from attic windows, as it becomes a ventilating shaft for the house drain. At the other extremity of the house drain is the "inspection chamber," with its disconnecting traps and its fresh air inlet, and here it is that the yard gully pipe joins the house drain on its way to the main sewer.

The W.C. flush tank should be disconnected from the

general cistern, and the wash-down or the valve closet (the latter is too elaborate and too expensive for cheap dwellings) is preferable to the "wash-out" closet. Whenever you see the old pan closet condemn it. Beneath the pan is what is known as the D trap, an abominable construction which usually becomes a miniature cesspool within the house. Even the best constructed sanitary convenience may become insanitary through the carelessness of residents. You will do well, Ladies, if you teach people to respect their landlords' property, and land-



(*a*) Airtight iron door of manhole.
(*b*) Pipe from yard gulley.
(*c*) Raking arm.
(*d*) Siphon trap.

lords to respect the Public Health Acts. I regret to say, though the Acts insist on proper sanitary conveniences being provided for the people, you will still find many houses in Irish towns without privy or closet of any description.

In country places W.C.'s are often replaced by earth closets; where the tenant has a garden it is by far the most suitable arrangement. The floor should always be of asphalt or other impervious material. If the place is to be cleansed only once a week or once a month there

should be some arrangement, as in the earth closets planned by the late Dr. Vivian Poore, to enable all fluid to run off; for dry excreta is far less offensive than when putrefaction is aided by moisture.

Personally I am attracted to a far simpler method, one I have seen worked in England with admirable results, and which leaves the cottager little or nothing to break, spoil or damage. The apparatus consists of a well-lighted and ventilated outhouse with impervious floor, a hinged seat, and beneath a small galvanised foot bath, such as may be bought for a few shillings, and a box of dry earth, powdered turf, sawdust or ashes. The bath should be cleansed daily, the contents being used in the garden. When plenty of dry earth can be obtained nothing can be simpler nor less offensive; the excreta, if, like "leaf mould," allowed to "ripen" by time and weather—and lightly covered with earth it is not the least offensive—becomes admirably suited for general garden use. Should it, however, be applied "unripened" it will not suit the more delicate plants, but may with success be used with anything of the cabbage tribe. After one crop of cabbage it is suitable for the most fragile vegetables. Dr. V. Poore found such mould excellent for peaches. Crushed or powdered peat is an admirable deoderant, and far easier to get in many parts of Ireland than dry earth; of course the turf should be dried by sun or fire. For garden use I cannot speak from experience of this nor yet of sawdust nor ashes.

Ashpits may be a source of danger, especially when they are used for anything and everything but ashes. Organic refuse is best burnt unless suitable to convert into vegetable mould, or to feed that domestic scavenger, the household pig. In cities the municipal authorities

see to the daily removal of house refuse, and a great deal taken away as such might be utilised by a thrifty housewife to save kitchen fuel.

To the last I have left what I regard as one of the most important factors in the health of a community—the proper supply of good water. In this respect the poor of a city are generally better off than their brethren in the country.

Shallow, imperfectly protected wells are responsible for much illness in rural districts. In towns contamination generally takes place in storage; when possible it is better the drinking water supplied by a water company should come from the company's mains without domestic storage; this however is not possible in towns where the intermittent system is in practice. Drinking water stored in domestic cisterns should be absolutely disconnected from the W.C. tank, as empty pipes become ventilating shafts and water readily absorbs noxious gases.

There are parts of England where almost annually there is a water famine, yet very little is done to store rain water. In speaking of beverages, I shall say more to you on the subject of water; in the meantime let me remind you that, should you ever find it difficult to get local authorities to remedy defects in a rural water supply, you should, rather than rest there, seek advice of the Local Government Board.

LECTURE V.

FOOD.

Ladies,—You have no doubt observed that living structures are perpetually undergoing change—in fact decay and death are essential conditions of life. In our bodies, as really as in the animal and vegetable life around us, these changes are taking place—structures broken down from within are built up from without. The simplest forms of vegetable life can draw their building and heat-giving materials from the atmospheric gases and a little water, the more complex demand the organic and inorganic materials of the soil in addition to air and water. The simpler the structure of an organism, the simpler as a rule will be its food. Our complicated organisms cannot draw all their nourishment from the atmosphere and soil; the nitrogen necessary for building and repairing our bodies, and the carbon for supplying heat and energy must reach us through the vegetable and animal kingdoms.

A food, according to Dr. Robert Hutchison (whose book on the Principles of Dietetics I strongly recommend to all interested in the subject), is "anything which when taken into the body is capable either of repairing its waste or of furnishing it with material from which to produce heat or nervous and muscular work". This definition, while including oxygen (of which we have

already spoken), excludes tea, coffee, and meat extractives; these, though useful in our dietary, are not foods in the above sense.

The foods commonly used by human beings are by no means simple substances, but are made up of a number of chemical constituents. Milk, for instance, which is a complex food and able of itself to build up and supply heat to the infant bodies of all young mammals, consists of:—

The curd—a nitrogenous substance coming under the head of proteids.

Sugar—a carbohydrate } Both rich in carbon.
Cream—a fat }

Mineral matter—lime, etc.

Water.

Proteids, mineral matter and water are tissue formers. Fats and carbohydrates being rich in carbon especially act as fuel for heat and energy. Proteids too can act as a fuel food. Albuminoids, of which gelatine is a good example, are even richer in nitrogen than proteids, but they cannot replace proteids as tissue formers, though as heat producers they are useful. Albuminoids plus only water and mineral matter would not, like proteids, support life.

Functions of Food Constituents in the Body.

Tissue formers.	*Heat producers.*
Proteids.	Proteids and albuminoids.
Mineral matter.	Carbohydrates.
Water.	Fats.
	? Mineral matter.
	? Water.

All foods come under one or other of the above heads.

The five food constituents—proteids, fats, carbohydrates, salts and water—found in milk must be supplied if the body is to be properly nourished, but as the digestive organs mature, these constituents may be drawn from other sources than milk.

Among foods rich in proteids we have such things as lean meat, fish, cheese, lentils, beans and peas.

Rich in fats we have cream, butter, margarine, fat meat, dripping, certain rich fish like eels, and oil.

Eggs are rich in proteids and fat, but poor in carbohydrates. Most cereals (save maize and oatmeal) are poor in fats, and only moderately rich in proteids, but very rich in carbohydrates.

Tubers such as potatoes, arrowroot, etc., are also rich in carbohydrates. Fruits in virtue of their sugar contain an easily digested form of carbohydrate. Nuts lack carbohydrates but are rich in proteids and fats. Most of the above-mentioned foods contain mineral salts, while green vegetables such as cabbage, lettuce, etc., although poor in proteids, fats and carbohydrates are decidedly rich in mineral matter.

In drawing up a dietary there are other things to consider besides the *chemical* test, which gives us the chemical constituents. An article may be rich in a certain constituent, yet unless that constituent can be assimilated by the human body it is useless as a food ; this is the *physiological* test, and by it we learn that animal foods as a rule are more completely absorbed than vegetable foods. This however is by no means always an advantage, since an unabsorbed residue is necessary for the proper functioning of the intestine. A diet wholly of milk would leave too little residue, while one too rich in turnips and

carrots would leave too much residue; the happy mean, however, might be found in a combined animal and vegetable dietary.

The third test is the physical or Caloric test (the amount of heat necessary to raise 1 kilo. of water 1° Centigrade, or 1 lb. of water 4° Fahrenheit, is a Calorie), by which we discover the amount of heat or energy that a food is capable of yielding. A pound of carbohydrate and a pound of proteid yield the same amount of heat, while one pound of fat yields more than double that quantity of energy. Dr. Hutchison puts it very clearly when he points out that :—

1 gramme of sugar (a small lump is equal to 4 grammes) yields 4·1 Calories.

1 gramme of proteid (white of one egg is equal to 4 grammes) yields 4·1 Calories.

1 gramme of oil (a thimbleful of oil is equal to 4 grammes) yields 9·3 Calories.

Lastly, we have the economical standard: How much proteid, fat, etc., can be purchased for a given sum? On the whole we find vegetable foods are cheaper, not only as heat producers but even as tissue formers. That is, for one shilling invested we shall get more proteid and more carbohydrate from the vegetable than the animal kingdom.

Though it is impossible to lay down hard and fast rules as to the exact amount of food a particular individual may require—climate, work, health, age, all being determining factors — still I think workers among the poor should have some idea of the amount of proteids, fats and carbohydrates a man doing moderate work usually requires per day. I would therefore draw your attention to the following standard dietaries.

A man doing moderate work requires, according to

	Hutchison's Standard.		*Atwater's Standard.*	
Proteid - -	125 grammes	Calories, 3027·5.	125 grammes	Calories, 3520.
Carbohydrate -	500 ,,		450 ,,	
Fat - - -	50 ,,		125 ,,	

The proteids in both cases are the same, but while Dr. Hutchison supplies his fuel food chiefly from carbohydrates, Dr. Atwater has lessened the carbohydrate so as to increase the fat. Carbohydrates, like albuminoids and proteids, are rapidly consumed in the tissues—fats are oxidised more slowly—therefore carbohydrates may be regarded as a "rapid" and fat as a "slow" fuel food, and the choice of fuel depends on the work demanded of the body. There is much yet to be learned about the exact use of fats in the body; certain it is in the case of little children that a deficiency of fat cannot be replaced by a liberal increase in carbohydrates. Dr. Cheadle years ago pointed out the connection between rickets and a lack of fat in the infant's diet.

Dr. Hutchison gives a very English standard diet worked out in meals, *viz.*:—

1 lb. bread. ½ lb. meat. ¼ lb. fat. 1 lb. potatoes. ½ pint milk. ¼ lb. eggs. ⅛ lb. cheese.	Breakfast.	2 slices bread and butter; 2 eggs.
	Dinner.	One plateful of potato soup; a large helping of meat with fat; four moderate-sized potatoes; one slice bread and butter.
	Tea.	A glass of milk and 2 slices of bread and butter.
	Supper.	2 slices bread and butter and 2 oz. of cheese.

This, as Dr. Hutchison points out, is a rather liberal diet, and its raw ingredients cost a little more than a shilling. Ladies, very few of those you visit will be able to spend

anything like a shilling a day per man. Looking over Dr. Lumsden's interesting report of the seventeen brewery families he investigated for the directors of Messrs. Guinness & Co., I find the daily expenditure on food[1] per man varied from about 4d. to 8d. a day, this with families earning £1 to £2 a week. Only one family mentioned by Dr. Lumsden was earning less than £1, and strangely enough in this case out of the 14s. earned per week 8d. per man per day was expended on food. Most of these seventeen families were insufficiently supplied with the necessary food constituents, especially proteid. This, as Dr. Lumsden points out, is due to lack of knowledge rather than lack of means—insufficient meat and eggs being the proteid carriers, while with the same expenditure a sufficiency of proteid might have been obtained through beans, lentils, cheese, oatmeal, maize, stirabout or herrings. Two salted herrings supply sufficient animal proteid per day for a man working moderately.

Many families met with in district visiting earn far less than these well-paid employees of Messrs. Guinness, therefore to them it is even more essential to understand what is required of an economical food. The following prices of proteid per lb., as obtained from different foods, may be of interest to some present :—

1 lb. of proteid in peas costs 7d.
1 lb. of proteid in oatmeal costs 7½d.
1 lb. of proteid in bread costs 1s. 6d.
1 lb. of proteid in milk costs 2s. 2d.
1 lb. of proteid in beef costs 2s. 8d.

—(Copied from *Food and Dietetics*, R. Hutchison.)

[1] Dr. Lumsden takes a man as the unit; woman, 0·8 of a man; and children according to age, varying from 0·8 to 0·3 of a man.

A knowledge of cooking is essential if one would get from food all the nutriment it can yield; this especially applies to vegetable foods, as cooking increases their digestibility by softening their cellulose and bursting the starch granules of which they are largely composed. On proteid it has a less beneficial effect, and as animal food is rich in proteid it is through cooking rendered somewhat less digestible *chemically*, its proteid becoming coagulated through heat; however, the new flavours created by cooking excite the digestive juices and thus indirectly aid digestion; besides, heat when supplied for sufficiently long, helps to sterilise food.

The chief defect of British cooking is an attempt to cook too rapidly. An egg cooked in boiling water and an egg cooked in water at a temperature of 170° F. will both be coagulated, being "lightly" or "hard boiled" according to the time employed; but the character of the albumen will differ according to whether a temperature of 170° F. or 212° F. has been used; in the former case the white will be jelly-like, in the latter "leathery". The same is true of meat albumen; to roast or boil a joint the surface albumen is exposed to extreme heat for a few seconds, so as to "seal" the joint, but according to the late Sir Henry Thompson the further cooking cannot be done at too low a temperature, 170°-180° F. being what he recommends at the centre of the joint. Of course cooking at such a temperature takes longer than when a higher degree of heat is employed; but gastronomically and hygienically the result is far more satisfactory.

The economy of fuel in France has, I believe, a great deal to say to the excellence of French cooking. Ladies, if you can teach people to cook slowly, and to stew meat

rather than fry it, you will have done much to improve the lives of those you visit; but the work will not be easy. In some of the Dublin workmen's flats gas cooking-stoves are provided worked on the penny-in-the-slot system; you may succeed in making the proprietor of such a stove understand that a pennyworth of gas wisely used can do the day's cooking, a continuous low heat consuming less gas than a "quick fire" with jets at full blaze, and with the slower fire the woman's cooking will generally improve.

The combinations of food common in national dishes though founded on instinct and custom have generally a scientific basis, *viz.*, potatoes and milk, once the Irish national dish, was a combination of vegetable carbohydrate with animal proteid and fat. Scotland's oatmeal and milk was, however, a better dietary, oatmeal being richer than potatoes in proteid and fat. The Indian dhal and rice is a similar combination, only the proteid is from a vegetable source, red-lentils, the necessary fat being supplied by a little "gee" (clarified butter). The Italian combination of cheese, oil and "paste" (macaroni is but one of many *paste*), is also a combination rich in proteid, fat and carbohydrate. Has not custom ordained that chicken (poor in fat) should be accompanied by ham or bacon; that melted butter should supply to vegetable and white fish what they specially want; that cheese, rich in proteid and sometimes almost equally rich in fat, should have its deficiency in carbohydrate supplied by bread, potatoes, or macaroni? Has it ever struck you, Ladies, that over and above the gustatory advantages of vinegar with sliced beet-root or cold lobster, the acid is a direct aid to digestion through softening the tough fibres of the vegetable and fish?

Another admirable custom is commencing dinner with a little clear soup; though it supplies little or no nutriment it is a useful stimulant to a tired body and braces the digestive organs for the serious work of dinner.

Clear soups and meat extracts do not come under our definition of food since they neither supply energy nor build up tissue, but as digestive stimulants they are useful.

They do not act as cardiac stimulants, nor has it yet been proved that they act directly on the muscles or the nervous system, though their power to remove fatigue has often been observed; taken in large quantities they are liable to produce diarrhœa. Beef juices, unlike beef extracts, contain proteid in a coagulate form—home-made raw beef juice contains about 5 per cent. proteid; beef tea when properly made (*vide* "Recipes") contains but $1\frac{1}{2}$-$1\frac{3}{4}$ per cent. proteid (milk 2-3 per cent., white of egg 12 per cent.), and therefore alone can never be of very great nutritive value. A thick soup in virtue of the peas, potatoes, barley, etc., it may contain is itself a meal, and totally unsuitable as an introduction to several courses.

Unfortunately soups are not popular among our peasantry; they gladly accept pea soup or Scotch broth from benevolent ladies, but rarely will take the trouble to make a soup themselves, though it is an economical and simple method of cooking.

The carrot, onion, cabbage in Scotch broth are served in their entirety; while treated as a boiled vegetable we lose many of their useful salts in the water in which they have been cooked; less is lost when the vegetables are steamed, a method rarely employed by the working classes. The French and Italian custom of using as soup stock the water in which many green and all legu-

minous vegetables are cooked, is as scientifically correct as it is economical. The water in which beans and peas have been boiled not only contain certain salts, but also an appreciable amount of proteid abstracted from these highly nitrogenous vegetables.

During this lecture I have tried to point out the advantages of a mixed dietary. The necessary food constituents can of course all be obtained from the vegetable kingdom, and at a lower cost than when supplied from animal sources. Pulses and grain can supply proteid; nuts, olives and certain grains, such as maize, supply abundance of fat; while most fruits and vegetables and all grains are rich in carbohydrate either as sugar or starch. The drawback, however, is that vegetable foods are generally bulky, and become more so through cooking; consequently through sheer bulkiness a wholly vegetarian diet is apt to overtax the digestive organs. But those who object to meat may with great advantage supply two-thirds of their nutriment from vegetable sources, making up the remaining third with eggs, milk and cheese.

With regard to the indigestibility of cheese, let me remind you that it is a food rich in proteid and very completely absorbed by the intestine; however, the fat it contains prevents the gastric juice getting easily to the proteid, consequently stomach discomfort is apt to arise. This may be avoided by grating the cheese and mixing it with a carbohydrate, such as macaroni or potatoes; or the cheese may be rendered soluble by the addition of a little bicarbonate of potash—as much as rests on a threepenny piece will dissolve ¼ lb. of grated cheese; the potash, being an alkali, also helps to neutralise certain fatty acids that may have formed in the cheese during the process of "ripening".

The "digestive habit" has something to say to the digestion of cheese as well as to the digestion of fats; a dog brought up on bread and milk will generally be ill if his diet is suddenly changed to meat, though meat is the natural food of dogs. Individuals who avoid eating fatty foods often lose the power of digesting fats; they find it makes them "bilious," and from these non-fat eaters consumptives are largely recruited. Likewise people unused to cheese have to be "trained" into digesting it. It is a training well worth undertaking if one wishes to live economically.

In conclusion, I would draw your attention to food in relation to age and occupation. We have already discussed infant feeding; we have seen how important proteid and mineral matter and fat are to the rapidly growing body; moreover, the immature digestive organs demand these constituents in a form easy of digestion, and since starch cannot be utilised by the infant body, the carbohydrate must be supplied by sugar. The mother's milk answers to these conditions; later when teeth have appeared the diet may be varied, proteid, salts and fat still holding an important place, while with increasing muscular exertion the demand for carbohydrate increases.

Most children like sugar, and it should be given to them liberally (as it is a useful muscle food), but not in too concentrated a form; sugar mixed with fruit acids, as in stewed fruit and jam, is a specially easily digested carbohydrate. As a fuel food jam has one-third the value of butter, 1 lb. butter yielding the same heat as 3 lb. jam. But a carbohydrate can never quite replace a fat, and even as mere fuel jam cannot be considered an economical substitute for butter at 1s. 2d. a lb.

Personally, I am inclined to think one of the chief

errors in the child dietary of this land, and more especially of the English Midlands, is a lack of fat. Children are generally fastidious as to the form in which they take fat; butter and cream they usually like, but fat meat, even bacon, is rarely liked; however, bread fried in bacon fat, and suet puddings with plenty of raisins are generally acceptable. Unfortunately children and uneducated adults are sensitive to public opinion, and I have known workmen and children who preferred dripping to butter, but would not use it at lunch for fear "the other fellows should say they could not afford butter"!—so a liberal supply of dripping was replaced by a meagre supply of butter. Margarine might with advantage be more constantly used.

Lately when studying peasant dietary in Tuscany I was much struck by the amount of fat consumed by the *contadini* and their children, chiefly olive oil spread with wine on home-made brown bread. The children and young people looked extremely healthy, and anæmia seemed almost unknown among the peasants with whom I mixed. A dietary based on baker's bread and milkless tea does not compare very favourably with the home-made bread and oil of a poorer nation, for I would have you remember, Ladies, it is not bread and *butter* and tea, but bread and tea, which is the basis of our city dietaries, and is, alas, spreading even to the country.

There are people who believe sugar is bad for children's teeth, and fish good for their brains! Neither statement can be proved; of course all carbohydrates are bad for the teeth, but there is no reason to suppose sugar is worse than potatoes. Too much soft food, too little exercise for the teeth, and lack of cleansing when going to bed are far more responsible than sweets for bad teeth.

With full maturity growth has ceased; the adult body, according to its expenditure of energy, will need daily repairing, but the building up of fresh tissue, as in the case of the child, is no longer necessary. Mental and physical work make claims on our energy. For the former class of work there is no special food; as the digestion of a large meal, however, means much expenditure of nervous force it is desirable that those who wish to husband their strength for brain work should abstain from large meals or foods difficult to digest. For the man who lives by his muscles we have muscle foods, such as the carbohydrates, especially sugar; proteids and fats are required generally in but small quantities as body growth is over and only a little daily repairing of the tissues is necessary.

If you recall for a moment the basis of national dishes, you will notice how large a part carbohydrates play in them. Rice, macaroni or rather "*paste*," potatoes, bread, oatmeal—these are the foundations of the dishes to which dhal, cheese and milk are added; for national dishes are essentially the foods selected by the man who lives by his muscles.

In old age neither proteid nor carbohydrate is as important as fat; body growth and muscular work are over, but old age unable to get warmth through exercise demands it of food, therefore fatty foods are specially useful for the aged.

Up to thirty there is little fear of over-feeding injuring the body; after that age, however, the body's power of eliminating surplus food grows less active; from thirty to fifty *temperance*, and from fifty onwards *abstinence*, as practised by the centenarian Cornaro and by the late Pope, Leo XIII., should be the rule of life if health is desired.

LECTURE VI.

BEVERAGES.

Ladies,—The natural drink of man is water ; it enters not only into all the beverages we drink, but also into all the foods we eat. It constitutes two-thirds of the whole weight of the body, and more than half the weight of most of our food.

The amount of water required by the body per day depends on climate, diet, work, etc. The fluid circulating in the body seems fairly fixed ; should the blood become too concentrated through increased activity of the excretory organs, then water stored in the tissues passes into the blood to supply the deficiency ; likewise should the blood become too watery (as happens when an excess of beer is taken) some of the superfluous water in the blood-vessels passes into the tissues.

Early Victorian mothers used to have a strong objection to children drinking water while hot and perspiring, yet it is just at this time the fluid should be supplied to the blood which is growing too concentrated.

Water is not absorbed in the stomach, indeed it passes very rapidly from the stomach to the intestine. A pint of water has generally left the stomach in three-quarters of an hour. Hot water, through its action on gastric

peristalsis, passes even more rapidly, and may thus, as well as through softening certain foods, actually aid digestion.

In excess water may dilute the gastric secretion and retard digestion, but quite two tumblers may be taken without any appreciable retarding of digestion (*vide Food and Dietetics*, Hutchison).

To be wholesome water should be chemically and bacteriologically pure. It is the duty of Public Health authorities to see that the public are supplied with sufficient good water. In this respect town residents are better off than their country brethren. Percolation through the soil, often from highly manured fields and surface pollution, render ill-constructed village wells little better than cesspools. Surface water, except in the neighbourhood of uninhabited high hills, is usually unfit for use. Not only at its source but in transit or during storage, water may become contaminated. Badly-jointed water pipes in the neighbourhood of leaky sewers can carry infection; water may be polluted through storage in unprotected cisterns or dirty vessels, or if allowed to lie in an ill-ventilated room it readily absorbs foul gases.

Filters are of little use, and unless constantly cleansed may become decided sources of danger; even the Berkefeld and Pasteur-Chamberlain need constant care. The simplest and safest method for purifying water from bacteria is to boil it and afterwards aerate it either by a gasogene, sparklets, or merely by pouring from one jug into another in pure air. The last-mentioned method is probably the only one possible to most of those you visit in the district, and you must remind people who have boiled their drinking water that, if not properly protected, it may become contaminated after boiling.

Drinking cups in schools are often responsible for the spread of disease. Children can easily be taught to avoid drinking dirty water, though I have seen the untrained street urchin lying on the pavement trying to drink out of the gutter.

Parasites such as worms, as well as enteric, diarrhœa, cholera and diphtheria germs may be carried by drinking water.

Diseases too may be carried by many of the manufactured mineral waters, if the water used by the manufacturer is got from polluted sources.

Mineral water is a term applied to distilled and non-distilled aerated waters as well as to waters obtained from certain mineral springs.

Distilled water, though bacteriologically safe, is not desirable for continuous use as it is apt to injure the mucous membrane lining the stomach.

Mineral waters containing soda, potash, etc., and aerated with carbon dioxide are often useful to neutralise acidity and aid digestion through the action of carbonic-acid gas. This gas aids both the chemical and mechanical process of digestion, and is often employed in water without the addition of any mineral matter, for a good deal of soda water now sold contains no soda, and is merely water plus carbon-dioxide gas.

Among the sweetened aerated waters we have lemonade, ginger ale, and ginger beer, etc. These do not always contain lemon and ginger — phosphoric or acetic acid replacing the fruit acids, and in the case of ginger ale capsicum (pepper) rather than ginger supplying the flavour; this however is not the case with stone-ginger beer, which is a fermented beverage containing ginger and about 2 per cent. alcohol. Phosphoric acid is not very

good for the teeth, nor capsicum for people suffering from kidney trouble, otherwise these drinks are harmless.

In virtue of the sugar they contain, about an ounce per bottle, the sweetened aerated waters are useful restorers in muscular fatigue; besides the acid and carbon dioxide make them cooling, pleasant drinks. However, in cases of "acidity" they are undesirable, and people suffering from weak hearts should use all aerated waters with caution, as the gas is liable by distension of the stomach to cause pressure against the heart. Of the aerated waters in use in the British Isles the best, according to Dr. Hutchison, come from Belfast.

In your work among the poor, I do not think you will find much use or abuse of mineral waters, but it is quite otherwise with those stimulating beverages generally classed as alkaloidal and alcoholic.

Among the first are tea, coffee, cocoa, etc. Besides the alkaloids thein, caffein and theobromine found in tea, coffee and cocoa, we have tannic acid and certain oils. Caffein (also called thein when found in tea) stimulates the brain, heart and lungs; it increases the flow of urine, and aids in the elimination of waste products; it lessens the sense of hunger though it is not itself a food, and in a measure it aids digestion. But this last effect is more than counterbalanced by the retarding of salivary and gastric digestion through the action of tannin and the volatile oils contained in tea and coffee. The volatile oils are also stimulating; that in tea dilates the superficial blood-vessels and moistens the skin, while the oil in coffee seems to have the opposite effect. Both tea and coffee are better taken after than actually with food, more especially if the meal is at all rich in proteids. Tea, rather more than coffee, retards gastric digestion; still

coffee, being usually taken stronger than tea, the retarding effect is in practice about equal when similar quantities of the beverages are drunk. Of course there are personal idiosyncrasies, which make some people more sensitive to tea and others to coffee. Tea, except with salt food (*viz.*, ham, herrings, etc.), increases the production of gas, and is therefore undesirable in cases of flatulency; coffee has not usually this effect.

Personally, I am inclined to recommend coffee to the poor as a decoction rather than an infusion—thus it is used in the East—and a smaller quantity of the ground berry can be employed. Some authorities maintain that in thus boiling the coffee the stimulating properties are lessened while the tonic remain. The addition of milk though ruinous to the aroma is hygienically an advantage as the albuminous matter in the milk helps to precipitate some of the tannin in both coffee and tea.

Even with the most carefully made tea, a certain amount of tannic acid is extracted, and the only way to mitigate this evil is to take the beverage weak. However, Dr. Hutchison thinks the injurious effects of tea have been grossly exaggerated. Nervous people and people with weak digestions would do well to avoid it or take it in a very diluted form; for the rest of the nation, Ladies, I should say "For ever let Britannia wield the teapot of her sires"!

Tea and coffee are not in themselves foods, but the sugar and milk generally used with them give them a nutritive value; cocoa on the contrary contains nutritive constituents, but practically is not much use as a food, since so little can be taken at a time. Dr. Hutchison has pointed out that it would require quite seventy-five breakfast cupfuls of cocoa to supply the total potential energy

demanded daily by the body, while sixteen such cupfuls of new milk would give the same amount of energy ; of course prepared on milk it becomes a valuable food.

Chocolate, which consists of ground cocoa, sugar and starch, is of even greater nutritive value, and prepared with milk, seven breakfast cups would supply all the energy and a good deal of the building material required per day. The stimulating properties of cocoa are far less than those of tea or coffee, therefore it is a more suitable beverage for children, provided they are able to digest the fat it contains.

"Vi-cocoa," that is cocoa plus kola, is a medical rather than dietetic drink, and should only be taken under medical advice.

Spirits, wine and beer come under the head of alcoholic beverages since ethyl alcohol, a product of sugar fermentation by yeast, plays an important part in all of them. It varies from 50 per cent. or more in spirits to 5 per cent. or even 3 per cent. in the weaker beers.

Alcohol is a local irritant producing redness and pain ; strong spirits taken without food are liable to irritate the mucous membrane of the stomach, producing inflammation or alcoholic gastritis.

On digestion it has chemically scarcely any action when taken in moderate doses—about 1-2 tablespoonfuls of brandy in twenty-four hours ; while by increasing the peristaltic movements of the stomach and increasing the flow of gastric juice it may actually aid digestion. For this reason it may be useful in old age when digestion needs stimulation. In intoxicating doses it interferes with digestion through the general depression it produces.

Alcohol comes under our definition of food since it is as really consumed in our bodies as in a spirit-lamp. As

a fuel food it stands midway between carbohydrates and fats. A gramme of the former gives 4·1 Calories of heat, fat gives 9·3, while a gramme of alcohol gives 7·0. Yet strange as the statement may seem, it cools rather than warms the body. This action of alcohol should be clearly understood by all who work among the poor, for as a class these people especially turn to alcohol as a heat-supplying beverage.

Alcohol is consumed in the tissues and gives off heat as really as butter or oil; but it is burnt up more quickly than a fat, and the heat it produces is readily dissipated. Besides this, alcohol stimulates the heart; and through its action on the controlling nerves dilates the superficial blood-vessels, so that more blood flows to the brain and the surface of the body; the latter action through radiation lowers the temperature. So though alcohol through oxidation in the tissues actually gives off heat, yet through dilation of the surface vessels and radiation it cools the body, and as the heat radiated is in excess of that produced by its own combustion the net result is a lowering of the temperature. Moreover, in large quantities it interferes with the production of heat by paralysing the cells, thus interfering with their action on fats and in a lesser degree on carbohydrates.

Canadian foresters, arctic explorers, and all who have had to face extreme cold know that alcohol in such climates taken preparatory to exposure is dangerous to life. If on the contrary one has been exposed to cold, and the blood has been driven inwards with risk of congestion to the internal organs, a glass of spirits (or tea) will stimulate the heart, dilate the external vessels, and bring about a happier distribution of the blood. But it is all-important, while the blood is thus driven to the

exterior, that the body should be properly protected from cold and radiation minimised through atmospheric warmth. In other words, if a cab-driver has to go out on a frosty night advise him to take coffee when going out (its action on the peripheral blood-vessels is the opposite to that of tea or spirits), and when he comes back to his warm house if he wishes let him take tea or whisky. I should recommend tea for hygienic as well as ethical reasons.

Not only among the poor, but even among the so-called educated, I have found gross ignorance regarding this action of alcohol, and I have always found the working man most grateful when the point has been explained to him. He believes the blood comes to the surface when he observes the flushed face produced by alcohol, and you may point out to him the glow of warmth felt is due to this increased superficial circulation, just like the warmth produced by friction or a hot bath.

Alcohol has sometimes been used in fever because of its power to lower the temperature.

Though there is no question about alcohol stimulating the heart, we are on more debatable ground if we speak of it as a brain stimulant. In large quantities it undoubtedly anæsthetises the brain; in smaller doses its apparent stimulating effect is probably due not so much to any direct action on the nerves as to its action on the blood-vessels of the brain. There, as over the surface of the body, the flow of blood is increased, and probably this increased blood-flow produces the brain activity that is sometimes observed before the anæsthetising process sets in. Following alcoholic exhilaration there is usually a period of depression; in some subjects this reaction far exceeds the exhilaration. Partly because of this and partly because of its not being a muscle food but rather

a protoplasmic poison alcohol is unsuited for sustained muscular effort, nor has it been found productive of the best class of brain work.

One may say roughly that, setting aside personal idiosyncrasies, for the normal person 1-1½ ounces of alcohol per day can be used for years without any very appreciable injury to the body, more especially if the consumer lives an active open-air life.

This corresponds to

A wine-glass of brandy or whisky,
or 2½ wine-glasses of sherry or port,
or 1 tumblerful of claret,
or 1 pint bottle of ale.

However, taken even in moderate but regular doses it is apt to make some very decided changes in the body affecting the nerve cells and vascular system. In excess it causes serious degenerative changes in all the organs of the body, and, Ladies, remember what is excess to one may be a harmless dose to another. A highly nervous man living a sedentary life may find himself injured mentally and physically by an amount of alcohol which would have no effect on a field labourer. The more nervous the organism the more sensitive it seems to the toxic effects of alcohol; and in a measure this may explain its pernicious influence on women—their systems rapidly degenerate under its injurious effects.

Healthy children and adolescents should never get it, as during growth the nervous system is immature and in an unstable state, particularly prone to degenerative changes.

The habitual use of alcohol in excess—and half a wine-glass daily may mean excess, since an overdose depends on the individual rather than the quantity consumed—is

far more injurious than an occasional drunken bout. One may be intemperate without getting intoxicated; the overdose, be it half a glass or a dozen glasses, constitutes intemperance. The anæmic lady with her daily glass of port may show in her body signs of intemperance not to be found in her groom's body, despite his observing the more important Church festivals and chief racing events by getting intoxicated. This brings me to a point upon which I feel very strongly, *viz.*, the use of alcohol as a medicine—it should, like cocaine and laudanum, be given only under medical direction. Red wine to make red blood is the cry of an ignorant public, and without any medical guidance numbers of nervous anæmic girls are dosed with red fortified wines. Strange though it may seem, white milk is made from red blood, and will in its turn make red blood, and will not generally irritate a weakened nervous system as the alcohol in the wine is apt to do.

Remember, if alcohol is to be given with caution to the healthy, it must be given fifty times more cautiously to the unhealthy, as in the case of degenerate systems an ordinary dose may prove an overdose.

Alcohol taken without food, as in drinking between meals or taking spirits undiluted, is specially injurious, as the alcohol reaches the blood too rapidly and affects the cells too powerfully. You remember I have already pointed out that alcohol is a protoplasmic poison; it is also a local irritant, and unaccompanied by food it specially irritates the mucous membrane of the stomach, producing first a temporary, later a chronic inflammation which interferes with healthy digestion.

The evils I have referred to are those connected with good alcoholic drinks taken in excess or taken under

unhygienic conditions, and with our poor it is often under these conditions that stimulants are taken. But though the British Isles can, I fancy, boast of more "licensed houses" than uncontaminated wells, still the *bonâ-fide* traveller finds it harder to get a drink of good whisky or unadulterated beer than a glass of pure water.

Ladies, I would have you think on these things.

CONCLUSION.

Ladies,—In the preceding lectures I have only been able to touch on various points of hygienic interest that must come under the notice of any one working among the poor and really anxious to help them. District visitors may have little to do with school children, while workers in schools may find hints on maternity nursing outside their province, still if I have interested you sufficiently to make you desirous of looking more deeply into that particular branch of hygiene which is specially connected with your work, I shall feel absolved for having dealt so superficially—a necessary condition in lectures like the present—with health questions of great importance.

As you have discovered, people learn far more from example than preaching, and each household that keeps servants has within its means power to spread hygienic rules through the community. Even the charwoman, who only works by the day, is influenced by the households for whom she works—as a district nurse I know this well. I remember a young woman who insisted on daily bathing her baby ; it was against the customs of the neighbourhood and the traditions of her family. The neighbours flocked to threaten disease and death, but the mother, headstrong in ideas absorbed during some years

of domestic service, answered all objections with "Sure the gentry do it, and their children are all right".

Some of the worst housewives that I have known have been girls who, before marriage, were maids in fashionable houses, and often I have wondered how far their former mistresses were responsible for their defects. After all, Ladies, a girl is not merely your servant, but also one of the possible mothers of the State; and I am glad to say I have known many mistresses who have recognised this fact and prepared the girls in their charge for the responsibilities to which they might any day be called.

Secondly, I would draw the attention of ladies managing clubs to the importance of providing members with recreations differing from their work. Once I lectured at a girls' club where most of the members were factory hands, girls who spent the day sewing hats; and the benevolent ladies who managed the club had provided sewing for the girls two out of the three days per week that the members met. Some one read out a story book while the girls made clothes for themselves or for little black children, who would be healthier without clothing. The ladies of the committee complained that the girls attended badly except the third night, when they had a dancing class. Hygienically that club was a mistake, with the exception of the dancing evening; fresh air and exercise were what those girls needed, and provided the rooms were well ventilated a choral class preceded by good breathing exercises, or a Swedish drill class, would have been far more recreative than sewing.

In district work I have been constantly struck by how much is done for the people and how little the people are allowed to do for themselves. Of course it is far easier

to manage a club than to teach its members how to manage it, just as it is easier to give a man a shilling than to show him how to earn it: but is it fair to the man we want to help? May not much failure in philanthropic work be traced to this insatiable desire to spoon-feed the poor? Clubs are started and managed for the working man and woman—why should they not be taught to manage their own clubs? And in time they will themselves start fresh ones, and have far more interest in this, the work of their own hands. So too with co-operative stores, etc.

One of the most depressing things about the poor is their lack of initiative and their dislike of taking trouble; the latter I have found specially the case in ill-fed communities.

If the professional classes shrank from work as the labouring classes do, their homes would be as miserable. It is not merely that large numbers of men in the labouring classes object to regular work, but that their wives strongly object to sewing and cooking. Why go to the trouble of making pea-soup or suet-dumpling when you can spend the time gossiping with a neighbour and dine off tea and bread? The tea and bread meal is generally no cheaper and far less nourishing than the pea-soup.

I have seen women drink and appreciate pea-soup that I have provided, and shrink from the labour of making it when I gave them the dried peas. I have heard men refuse regular work on a railway at 16s. a week, and prefer a precarious living by occasionally helping to unload a coal-boat or doing other odd jobs that left five days free out of seven. Inactivity is not the natural condition of a healthy human body. Drink may be in some cases responsible for having injured mind and body, but

far more often, I believe, it is due to improper feeding in childhood and improper training in school life. In school one should learn the pleasure of mental and physical activity.

Despite political economists and politicians, I fear I am woman enough to consider that compulsory education should carry with it at least one compulsory meal a day, and two full hours' play in *daylight*, an hour of which at least might be spent on an organised game such as hockey, etc. To me, a nurse, it is an appalling thing to see children spending the best hours of the day in a close, often overcrowded, schoolroom. If what they learned at all made up for what they lose one might feel less strongly on this point. Time spent in the open air need not be time lost even from the schoolmaster's point of view ; not only may the body be invigorated and the brain rendered more efficient, but "object lessons" and organised games can do much to train the power of observation and the will. Believe me, hockey, football, etc., do more than sermons or schoolmasters to teach self-control and discipline.

Crèches are not as common in Ireland as in England, since manufacturing towns are fewer and women freer to remain at home. Where, however, mothers must work, it is better the babes should be properly cared for in a crèche than left to the tender mercies of a half-witted neighbour.

I have never inspected an Irish crèche, but those I have seen in England have, with one exception, been understaffed, and some have been badly ventilated. Neither is a necessary condition. A properly managed crèche may become a training school for nursery maids, and such maids should be obliged to pay a small premium before

entering the crèche. The head-nurse ought to be well trained and a woman able to train others; she—and in the case of a large crèche an assistant nurse—would alone receive salaries. Thus the staff might be increased without increased expense, and the babies could get that individual attention and petting which is so essential to their healthy development.

It is sometimes urged against crèches that they remove from the mother that sense of personal responsibility and the hourly self-denials that go so far to develop a woman's character—so do kindergartens and schools. This objection is generally brought forward by women who themselves keep a staff of servants and governesses, and do not even at night look after their own babies, but expect the unfortunate nurse who has had the infant all day to look after it all night as well. The factory woman, if she does leave her baby for eight or nine hours in a crèche, has entire charge of it during the remainder of the twenty-four; besides, she usually pays towards the crèche quite as large a proportion of her income as her wealthier sister spends on her entire nursery staff.

Some of you are interested in provident societies, coal-funds, clothing-funds, etc. Such societies are not only a true help to the people—for they teach them to help themselves by saving money week by week—but they give you, Ladies, an easy and dignified *entrée* to the homes of the poor. You come to help, not to pauperise—very unlike the donor of free coal-tickets, free breakfast-tickets, etc., etc.

During your weekly visits you will probably have many chances of giving hints on hygiene, but the visitor who can more than any other improve the hygiene of cottage or tenement homes is the district nurse. Her influence and her opportunities are usually greater than those even of the

medical man. She generally knows the people better and can spend more time with them; and she can be a great help to the sanitary inspector and the medical officer of health. It is on this account that I object to half-trained, ill-educated girls becoming district nurses. The nurse, no doubt, is primarily for the nursing of the sick, but she can also improve the health of the community by improving the homes she visits; therefore hygiene and sanitation should enter largely into her training, and this can be done in a three years' training such as the Queen's nurses get. A good midwife or maternity nurse is invaluable in improving the conditions of baby life; the woman she has attended will carry out her directions when she would scorn those of a young doctor, more especially if he is unmarried!

I thoroughly disapprove of free "maternity bags" and free maternity nursing, unless the patient is in the "Union". Illness may come suddenly on a woman when she may be wholly unprepared to meet the necessary expenses; not so a confinement, which permits of several months' preparation; and there are very few women who could not in eight to nine months save at least two shillings towards the expenses of a confinement.

In a short course of lectures like the preceding it has been impossible to speak of the Public Health Acts, yet I think workers among the poor would find it useful to study those sections of the Acts which deal with disposal of refuse, keeping of animals, overcrowding, water supply, and notification of infectious ailments.

The curse of the slums are corner "public houses" and thoughtless philanthropists; legislation in either case is difficult, but public opinion can do much. Mrs. Bosanquet in that most admirable book, *Rich and Poor*,

has laid down three rules that should be the keynote of all charitable work among the poor :—

1. "We must avoid encouraging bad habits.
2. "We must be careful not to do anything which may check the free movement of labour.
3. "We must avoid raising expectations which we shall not be able to fulfil."

Personally, I have come across more offenders against the first two rules than the third, especially the first. As Mrs. Bosanquet points out, no charitable visitor would directly encourage bad habits, but indirectly many do it. How often by relieving a wife and children is a husband set free to idle and drink or otherwise indulge himself? "But it is often urged" (I quote from *Rich and Poor*) "we cannot let the family suffer for the father's faults. It is not quite clear to me that we cannot if that is the shortest way to redemption for all alike."

Besides, Ladies, I would remind you there is the "Union," where the wife and children may find shelter, and the Poor Law Guardians will see that the husband contributes to their support; also there is the Prevention of Cruelty to Children Act, which might be utilised much more than it is to break parents of self-indulgent habits, and teach them their duty to their offspring.

Secondly, charities which keep people in districts where there is no work for them, and thus prevent their migrating to where work may be found, are harmful, as they check the free movement of labour.

True help demands that the recipient should as soon as possible be put in a position to help himself. Of course it needs far more time and thought to find work for a man than to give him mere relief; that is probably why the

latter method is more popular among lazily benevolent people.

A great deal of time and labour is wasted through lack of organisation among charitably disposed individuals. In London this difficulty is faced by that most admirable body, the Charity Organisation Society. In Dublin and a few other cities similar organisations on a smaller scale may be found; but I regret to say a great number of workers among the poor know nothing of these societies; besides, there are many towns where no such advisory bodies exist.

I should strongly recommend ladies undertaking district work not merely to become familiar with the streets they have to visit, but to learn all they can about the town or village in which these streets are situated. A knowledge of the town's organic life is as essential to the curer of slum distress as a knowledge of the organic life of the body is to the doctor treating a special organ. The district visitor should know all about the various charities and aid societies of the neighbourhood, and be in touch with the district nurse, relieving officer, and (in a Roman Catholic community) with the local secretary of the district branch of the St. Vincent de Paul Society, or the visiting nuns of the neighbourhood; and finally, she should know personally and intimately those whom she wishes to help. I do not mean that ladies who do not enter the slums cannot help; they may help by making clothes, supplying money, food, etc., yet the distributing of these gifts should not be in their hands, but in those of one intimately in touch with the poor, and anxious to do away with not merely distress, but the *cause* of distress.

In conclusion, let me remind you that the more we

work on preventive lines the more efficient our work will be.

In times past we have thought too much of the curing, and too little of the *preventing*.

As Mrs. Bosanquet points out, our hospitals are not only "monuments of charity, but they are also monuments of our indifference to the elementary principle that prevention is better that cure".

REFERENCES.[1]

Those interested in the subject of the preceding lectures will find the following books useful :—

Hygiene and Public Health, by Louis C. Parkes, M.D.

School Hygiene, by A. Newsholme, M.D.

The Child, by N. Oppenheim.

Fundamentals of Child Study, by Kirkpatrick.

The Human Frame and Laws of Health, by Drs. Rebmann and Seiln.

The Child, by W. B. Drummond.

Physiological Psychology, by W. McDougall.

The Study of Children and their School Training, by Dr. F. Warner.

Food and Dietetics, by R. Hutchison, M.D.

Infant Feeding, by B. Langford Symes, M.D.

Rich and Poor, by Mrs. Bernard Bosanquet.

How to Help Cases of Distress, by C. S. Loch.

Women and Economics, by Mrs. Stetson.

Elements of Sanitary Law (6d.), by Alice Ravenhill.

The Care of Children, by Robert J. Blackham, D.P.H. Lond.

Simple Sanitation : the Practical Application of the Laws of Health to Small Dwellings, by M. Loane.

Alcohol and the Human Body, by Sir Victor Horsley.

[1] The books named in this list can all be obtained from the Scientific Press, Ltd., 28 and 29 Southampton Street, Strand, London, W.C.

Both the National Health Society, 53 Berners Street, and the National Union of Women Workers, 59 Berners Street, London, publish cheap pamphlets on health, sanitation, infant feeding, sick nursing, etc., etc. There is also a penny pamphlet issued by the National Union of Women Workers on the *Legal Difficulties of the Poor*.

RECIPES SUITABLE FOR INFANTS.

To make Barley Water for an Infant.—Wash a tablespoonful of pearl barley in cold water, and put it into a quart of boiling water. Let it stand 5 to 6 hours, then strain it. Keep in a cool place and make daily, as it does not keep longer.

Another method.—Wash well in cold water a tablespoonful of pearl barley, then add to it $1\frac{1}{2}$ pints of cold water and boil down to a pint (about 20 minutes), strain, keep in a cool place, and make it daily.

Lime Water.—Slake a piece of freshly burnt lime about the size of an orange by sprinkling water on it, then put the crumbled lime into a gallon jar and fill up with cold boiled water, cork tightly, shake well, and in twenty-four hours it will be ready for use. Pour off as much as is required of the clear fluid; if the sediment is disturbed strain through muslin. Lime water should never be boiled, and it ought to be well corked as it easily spoils through exposure to air. It should be made freshly at least once in three weeks.

Beef Tea.—Take 1 lb. of lean, juicy beef, remove all fat and gristle, cut into small pieces, or better still, scrape the beef, and place in a jar with a pint of cold water and a good pinch of salt. Allow the jar to stand in a saucepan of boiling water. The beef tea must cook (but not boil) for four hours, and then the fluid may be

poured off and used. Even in re-warming beef tea never let it boil, as it renders its albumen less digestible.

Raw Meat Juice.—Mince finely (or better still, cut and pound up) ¼ lb. of lean beefsteak, add to this two tablespoonfuls of cold boiled water. Stir well together and leave to soak for half an hour in a cool place, then place in muslin and squeeze out the juice. This should be made fresh daily, or even twice a day, as it does not keep well.

Whey.—Into a pint of fresh milk, barely warmed, put one teaspoonful of essence of sweet rennet; stand in a warm but not hot place for twenty minutes; then press through muslin, squeezing the whey from the curd.

Bread Jelly.—Break up the crumb (not crust) of a loaf; pour boiling water over it and leave it to soak for three hours; then strain, squeezing all the water out of it; place this pulp in a saucepan with cold water and let it boil for half an hour. When quite soft take out the bread, squeeze it thoroughly and place in a basin ready for use.

A tablespoonful of this bread jelly may be beaten up with milk and sugar for an infant *over seven months* old. Without medical advice it should not be used for younger children.